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THE
EDINBURGH MEDICAL JOURNAL.

NUNQUAM ALIUD NATURA, ALIUD SAPIENTIA DICIT.

THE

EDINBURGH MEDICAL JOURNAL

EDITED BY

G. A. GIBSON, M.D., F.R.C.P.Ed.

AND

ALEXIS THOMSON, M.D., F.R.C.S.Ed.

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THE

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EDINBURGH MEDICAL JOURNAL.

EDITORIAL.

In an intellectual centre such as Edinburgh, with its renowned University, its venerable Colleges, and its ancient School of Medicine, it must constantly happen that subjects of the highest import, both in the domain of medical science and in the region of medical politics, are perpetually arising, forming food for thought, or, it may be, calling for redress.

Within the past few years the normal academic calm so characteristic of a University town has, in the case of Edinburgh and her School, been agitated by the cross winds of untoward circumstances. As a general rule, the discussion produced by such circumstances has been limited to the smoking-room, or dismissed with the after-dinner port. That great world of medicine which is peopled by the alumni of the University and the Colleges, scattered as they are to the four quarters of the globe, know nothing of these events, or perhaps merely sufficient to whet their appetites for more, and in this way a powerful factor for reform is wasted. Those at home have no leader, those abroad no knowledge.

Under conditions such as these, it is inevitable that the standard of reform should be unfurled. "Efficiency" is as necessary in medicine as in politics, and might with equal justice form the motto for a University as well as for the Liberal Leaguer. During the past twelve months the pages of the *Edinburgh Medical Journal* have foreshadowed many coming events, and have more than hinted at abuses for whose existence there is no excuse. Such hints have not proved of much avail, for, it may be, they have merely been regarded as personal opinions, and have been dismissed as such by the reader. They have, nevertheless, paved the way for a more explicit declaration of policy.

With the current number are instituted Editorial Articles as a prelude to "Current Topics." In these editorials the policy of this Journal will be made apparent. That policy will not be a mere personal expression on the part of one or two men, but will be a reflex of current medical opinion, duly weighed and discussed by those whose opinion it expresses. Given a definite policy with unity of action, we shall be confident of success. Heretofore there has been neither one nor other; if we can but indicate the way we shall be more than satisfied, for there are countless willing hands and many intellects capable of ensuring the success of any movement, given the necessary initiation.

Nor is this initiation of reform the only object of this Journal. There are many scientific and practical problems which cannot receive justice either in an article or a brief epitome. Results of apparently widely separated research, divergent modes of treatment, and the scattered literature of disease, are often best summarised and more accurately focussed in the pages of an editorial than in the personal article of the individual. The successful achievement of this object is therefore also one of the ambitions of the Journal.

If these two ends can be gained,—an academic summarising of the advancements of medical art, and the welding of personal opinion into a vital force,—we feel that the general utility of a Journal such as this will be enormously enhanced, and that its value as an expression of Edinburgh medical opinion will be in no wise diminished.

AT the November meeting of the Edinburgh University Court, Sir William Muir intimated his resignation of the Principalship, which he has held for the last seventeen years. The intimation has called forth expressions of sincere and general regret in University circles, and especially on the part of the students; for, during the period of his Principalship, Sir William has not only upheld in a notable manner the best traditions of his office, but has manifested a profound interest in the welfare of the students, both collectively and individually, which has won for him a high place in their esteem.

The appointment of his successor is naturally being looked forward to with a very considerable degree of interest, especially as, in the present state of University affairs, much will depend on the kind of man selected by the Curators, whose task is on this occasion one of exceptional responsibility. What the University most requires at the present time is a good business head, and the new Principal should be a man gifted with the qualities requisite for the direction of a highly complex organisation, rather than one whose chief claim is the possession of exceptional scholarly attainments or academic ability. Even if there were no prospect of University expansion along new lines in the immediate future, there is a great deal to be done in the way of bringing the general administration and methods up to the level of modern ideas and requirements; and in this direction alone a man of business capacity would find ample scope for the exercise of his powers.

The need of a good organiser at the head of affairs appears still greater, however, in view of the prospective extension and multiplication of University departments—brought much nearer realisation by the institution of the Carnegie Trust, as a large proportion of its income is specially set apart for such purposes. The assistance which Edinburgh can expect from this source is, nevertheless, quite insufficient for immediate requirements, and it will be necessary to follow the example set in Glasgow and elsewhere, and appeal to the general public for additional funds. The new Principal will naturally have to take the lead in carrying through this important expansion, and, as the departments in which progress has to be made are chiefly in connection with Medicine, Science, and Modern Languages, it is to be hoped that he will be in full sympathy with this side of University work, and free from strong bias towards the more classical departments.

It is of course desirable that the Principal should be a man of high culture, and one who would worthily uphold the dignity of the University on public occasions, as well as in the less prominent departments of purely academic routine; but, while such qualifications may be necessary, they cannot be considered sufficient in themselves. Nor would the appointment of a man, however eminent, whose life-work has already been practically completed in some other position, satisfy the present need; the labour involved in properly performing the duties can be undertaken only by one in the prime of life, willing and able to work strenuously for the general welfare of the University.

While there would be a considerable advantage in introducing entirely new blood, and selecting an outsider not yet accustomed to the *laisser faire* attitude which is too prevalent within the University, there is something to be said, on the score of urgency, in favour of giving the appointment to some one already intimately acquainted with University affairs, and possessing practical experience not merely as professor, but in some administrative capacity. If the second of these considerations should be considered the weightier, there can be little doubt as to which member of the Senatus Academicus would be the most suitable for the vacant post.

THE fact that, both in England and Germany, Commissions are now at work in investigating the subject of cancer, makes it natural that we should attempt to form an idea of what lines of investigation are likely to lead to an increase of our knowledge. Within recent years, few facts have been elicited which throw any new light on the nature and etiology of that ill-defined group of—it may be, different—conditions which we class under the heading of new formations. It is true that the parasitic theory of the origin of certain tumours has come to the front, but its most staunch supporters will admit that they are still far from possessing definite evidence in its support; and certainly here in the future much inquiry is necessary. All we can say with regard to tumour formation is that, under certain circumstances, the normal balance in the operation of the laws which govern cellular division in the body is disturbed, and thus certain cells develop abnormally. Whether this is due to inherent properties always possessed by such cells, or whether the application of some noxa—physical, chemical, or parasitic—causes an aberration in cells which have previously pursued a well-ordered course, we cannot say. Such, in brief, has been the attitude of the pathologist for many years; but we think that at present there are possibilities of an extension of our knowledge. Many points in the histology of tumour cells require elucidation, especially those appearances which are variously interpreted as parasites or as cellular degenerations. It appears here that a careful consideration of modern zoological results, dealing with the mechanism of cellular development, might throw light on aberrant cellular proliferation; for in such inquiries, contrary to what is the case with tumours, we have the etiological factor completely under control. Thus Loeb, Wilson, Mathews, and others, by various chemical and also by mere mechanical shaking, have caused in the ripe unfertilised eggs of some lowly invertebrates a cellular multiplication, sometimes along very abnormal lines, which forcibly recall appearances often met with in tumour cells, sometimes along lines which are followed in eggs fertilised in the usual manner. Again, Calkin and Lieb have shown that, while under ordinary laboratory conditions a paramecium is only capable of dividing 200 times without conjugation with another individual, the necessity for this rejuvenescence can be indefinitely postponed by appropriate chemical stimuli. Inquiries along these lines might throw important light not only on the abnormal appearances often found in the protoplasm of tumour cells, but also in the vegetative capacities of cells developing under abnormal stimuli. Again, within recent years, too little attention has been paid to the investigation of the possible part played by injury, whether physical or chemical, in tumour formation. The fact already stated, that shaking a cell may start its development, emphasises this point; and it is highly important that the occurrence of epitheliomata following paraffin-workers' eczema, and the alleged capacity of continuous irritation of an animal's skin by xylol, to set up a similar condition, should be made the subject of experimental inquiry. Here it may be remarked—and the remark applies equally to implantation experiments and to experiments with so-called parasites—that, in the past, too little attention has been paid to the advisability of using for such experiments old animals which are in the period of maximum susceptibility to malignant disease, which animals are of course extremely difficult to obtain.

While such inquiries might throw light on the etiology of tumours and the course of their formation, it by no means follows that these matters must be cleared up before the practical question of treatment is to be approached. It is really from this point of view of treatment that we have at present the widest basis for experimental inquiry. The vast mass of facts which during the last few years has been accumulated in the attempts at the solution of the problem of immunity against bacterial infection, has the most important bearing in the cancer problem. The deductions drawn from what is known may briefly be said to be that, in the successful effort of the animal body to resist the inroads of a living bacterial cell, the latter is killed and dissolved. For the success of the effort two substances require to be present, and to become attached in proper proportions to the bacterial cell. The nature of these is in each case unknown, and at present they are chiefly differentiated by the fact that one is easily affected by heat, the other is not. The former is normally present in the serum, which separates when blood is shed; the latter probably exists in very small amount or in a different form in the body, but by an immunisation process it can be enormously increased. Recovery from an illness due to bacterial infection thus ultimately rests on the presence in the body of this substance, or on the capacity of the body, after infection, rapidly to form it in a quantity sufficient to act in co-operation with the normally present substance in such a way as to cause the death of the bacteria. Bacteria, however, are not the only cells whose solution the body can undertake by means of a similar mechanism. If repeated doses of red blood cells from one species of animal be injected into an individual of another species, the latter develops a serum which is capable of dissolving, both *intra vitam* and *in vitrio*, the red blood corpuscles of the species whose blood was in the first instance injected; and here, again, two bodies are concerned precisely similar to those at work in combating bacteria. Again, if repeated doses of liver cells for an animal of one species be injected into an individual of another species, the serum of the latter possesses the property, when injected into an animal of the first species, of causing death from necrosis, and breaking up of the liver cells—the mechanism of the reaction being again the same. In all these cases the introduction into the body of a foreign cell sets up a chain of processes which results in the presence in the blood serum of two substances, which can act together and destroy cells similar to those introduced. Now it is possible, as was first pointed out by von Dungern, that by the injection of cancer cells into an animal, a serum might be obtained from it which, when introduced into the body of an individual suffering from cancer, might cause the death of the cells constituting the latter. The investigation of this question will be full of difficulties. The two substances concerned in the solution of cells are probably not single. We have probably to do in each case with a group of substances, and to obtain the representative of each suitable for action within the human body is only one of the obstacles to be overcome; but the quest is certainly not hopeless, and the extreme importance of its aim justifies the most strenuous endeavour.

One fact may be here alluded to. The substances mentioned as necessary to the solution of cells are probably formed by the white blood corpuscles. Now it is well known that these corpuscles are very often attracted by the cells in malignant tumours, often enter into the protoplasm of the latter, and attempt their solution. It may thus be that the solution of cancer cells is among the capacities of the leucocytes, and it may be that this capacity is capable of artificial increase along the lines of what occurs in an antibacterial immunisation. We thus see that several lines of inquiry into cancer are opening up, and that important results may be obtained.

Practical Midwifery for Edinburgh Students.

IN a recent number of the magazine which represents the University undergraduates, there appears an article on "Midwifery Teaching in Edinburgh," which, from their standpoint, tells a sorry tale of the inadequate means which exist for the practical acquisition of this most important branch of medicine. In this it only echoes the note struck by Dr. Milne Murray in his valedictory address to the Obstetrical Society a year ago. When considered, therefore, from the different aspects of student and teacher, both of which entirely harmonise, there surely must be more than a grain of truth in the assertions; and it would appear to be incumbent on those responsible for an apparent lamentable state of matters, to inquire into the details and rectify the existing deficiency as soon as possible.

When, as is cogently pointed out, it is necessary for such large numbers of our students (about seventy went to Dublin alone last year) to leave their Alma Mater for other schools merely to acquire better knowledge of this one subject, further proof is not required of the necessity of some improvement in our teaching.

As is well suggested, the establishment of student residences in close communication with the Maternity Hospital is one of the most essential requirements. To those with any knowledge of the subject whatever, this must appear a *sine quâ non*, as, due to the irregular conditions associated with confinement cases, it is often impossible for the student, working simultaneously at other subjects, to be present when labours are actually in progress, without spending needlessly a large amount of valuable time making periodic aimless visits to ask if "anything was going on."

This is only one of many improvements which might be suggested, and must be adopted if we hope to keep our School abreast, far less in the forefront, of the teaching of that branch of medicine with which it has been, and might still be, renowned, thanks to the efforts of Sir J. Y. Simpson and Matthews Duncan.

French and German Military Hygiene.

IN the *Journal de médecine de Paris* for 30th November 1902, attention is drawn to the comparative mortality returns of the French and German armies. Truly *une terrible situation;* for, while the Germans lost only 432, the French lost 2276, men during 1900 from fatal disease, or as 1 to 5, although the hospital admissions from the French army were only rather more than double the number of the German cases. That is to say, that since the struggle of 1871, while Germany has lost about 13,000 men from her flag, or less than a division, France has to acknowledge 99,000, or three army corps. Such are the facts reported to the French Senate, and admitted to be true by the chief of the French army.

Enteric fever and tuberculosis were the two outstanding causes of death amongst the French and German soldiers with the colours during 1900. The following table shows the number of deaths from these causes in the two armies, each of which may be taken to have numbered about 600,000 effectives in that year:—

Table of Deaths in 1900.

	French Army.	German Army.
Deaths from enteric fever . . .	600	87
Tuberculosis	1415	129

The figures given show that almost seven times as many deaths from typhoid, and nearly eleven times as many from tuberculosis, obtained in the French army compared with the German.

The reason for this disparity is not far to seek. France, with a smaller population to draw upon, strives to maintain as large a standing army as Germany. Thus she cannot pick and choose her men so carefully. Her population scarcely increases, but year by year furnishes greater and greater numbers of conscripts. The standard has to be lowered from time to time; the duties required, in place of growing less, tend to become harder; and the unfortunate soldier, his resisting power enfeebled and more enfeebled, contracts some disease, suffers and dies while on service, or later in civil life.

Metaphysic.

THE English language certainly appears to afford a very excellent means whereby the meaning of words may be obscured and rendered enigmatic. George Meredith is an adept at the same. It would be difficult, however, we conceive, to instance any work in English more refreshingly incomprehensible than the fifth volume of Croft Hillier's "Heresies" (Grant Richards). The author is a metaphysician, and from this lofty height looks down upon mere physicians, scorns physiological scientists, and evidently is "anti" everything save his own personal adumbrations in metaphysic. Although so profoundly convinced of the woesome limitations imposed on all physiologists by their materialistic beliefs, he does not scruple to make use of some very materialistic, not to say vulgar, words regarding his fellow-men:—

"In what may be termed cults of the Guts and Pockets, such as now practically dominate what is called civilisation." A strong dose of metaphysic, in very truth!

The following choice extract concerning the metaphysics of suicide by poison, rich in present participles, explains the author's trend of thought, even if it fails to explain clearly what it leads to:—"The person who killed himself by swallowing, say, verdigris, would will, as actualisation of the universe, the sensory and psychical bodies constituting the swallowing, in conjunction with psychical bodies constituting the various feelings indicating poisoning, which, to observers, would appear as the willing of various psychical and sensory bodies constituting awareness of the effects of the poison on another person. The poison itself would be no active agent, causally determining the results." "Verdigris is nothing in real experience, but a preter-empirical notion and certain visual, tactual, and gustatory bodies."

Likewise, food has a bad time of it at his hands. A metaphysician can scarcely be expected to enjoy his meals, being aware that "the food that is 'taken' as the apparent pabulum, transformed into material compensating the 'void,' is, for metaphysic, sensory complexes and preter-empirical notions willed into, and out of, patent universe, in conjunction with the varying willing of the sensory complexes and preter-empirical notions constituting the 'wasting' or 'repairing' organs, etc."

Such a definition if applied to porridge, a sensory complex and preter-empirical notion willed into, and not out of, not the stomach but "patent universe," may raise grave doubts as to the propriety of taking "them" at all; the more if stirred up along with so many present participles.

ORIGINAL COMMUNICATIONS.

A CONTRIBUTION TO THE STUDY OF THE LOCAL DISTRIBUTION OF CANCER IN SCOTLAND.

By W. G. AITCHISON ROBERTSON, M.D., D.Sc., F.R.C.P.Ed., F.R.S.E., *Lecturer on Medical Jurisprudence and Public Health, School of Medicine, Edinburgh.*

(PLATES I. AND II.)

DOUBTLESS it may be thought that I have presumed rather far in attempting to give an account of the geographical distribution of cancer in Scotland. I have, however, guarded myself against any such rashness by entitling this communication, "A Contribution to the Study of the Local Distribution of Cancer in Scotland." I cannot find that such an inquiry has attracted the attention of any one in Scotland, and it seemed to me only right that some one should break the ground for others to work in. To investigate this question thoroughly would be a problem which might well defy the powers of any one man. I have been bold enough to attempt a beginning, and more with the object of bringing this question to the front, in the hope that it may stir up a greater interest in this most important subject in Scotland. I would earnestly urge the formation of a Committee of Inquiry, composed of medical men from different parts of Scotland, who are interested in this subject. In this way accurate and full details could be gathered as to the local distribution of the disease and as to the local conditions present, and much information might in this way be gained. Such inquiries have been and are being made in England and in Ireland. The Birmingham and Midland Counties Branch of the British Medical Association have appointed a committee, which is engaged at present in the investigation of the "Influence of Locality on the Prevalence of Malignant Diseases in the Counties of Warwick, Stafford, Salop, and Worcester." In Germany a great collective investigation, under the guidance of Professor von Leyden, is being carried on with the same object. Similar work is also being done in America, and surely we in Scotland might devote some attention at least to this cancer question.

On looking over the Registrar-General's Annual Returns for Scotland, I noticed that the mortality from cancer varied very considerably even in adjoining counties. I made inquiries of medical friends as to the incidence of cancer in their practices in different parts of Scotland, and so gradually this inquiry came to embrace a very large part of Scotland. The results which were obtained, and which do not profess to be absolutely accurate, may yet be compared with the results of similar investigations in other countries, to see in how far the ordinary causes assigned for the topographical distribution of this disease hold good for Scotland.

It is of course a comparatively easy matter to construct a map to show the local distribution of cancer in any country from the Registrar-General's Annual Returns. This has been well done for England and Wales by Haviland. Such a map furnishes a general idea of the local incidence of cancer, and is doubtless fairly correct for a thickly populated country like England and Wales. For a country like Scotland, however, where the bulk of the population is congregated in a few large towns, it seemed to me that such a map constructed in this way would not give trustworthy data, and especially when made for such a disease as cancer. At present our only means of treating this disease is by surgical interference, and but few practitioners in country districts care to undertake the removal of cancerous growths. Consequently a large proportion of cancer cases are sent to hospitals or infirmaries in the larger towns for operation. Many of these patients, therefore, die away from their usual places of residence. In this way the mortality from cancer is unduly raised in many towns, while the reverse holds as regards country districts.

In order to counteract this registration error, I personally visited many of the larger institutions in Edinburgh and in other large towns in Scotland, and extracted from their registers all the patients who had died from cancer in these institutions during the three years 1895–6–7, and apportioned them to their proper towns or counties. Only those who have had personal experience in statistical inquiries can appreciate the labour which this examination involved. Even in hospitals where careful and accurate registers are kept, the investigation is laborious. Parenthetically, I might suggest that many hospitals would do well to model their registers after the example of our own Royal Infirmary. I have not found any registers which are at all comparable to these in accuracy and fulness of detail. On the other hand, in a few institutions it was next to impossible to obtain from the registers even the scanty information which I desired. In others the cross-references which were necessary to gain the information made this inquiry doubly or trebly more laborious than it need to have been. After all, the birthplace of an individual is not of so much importance as the place where he usually resides, nor is the person or firm who recommended him for admission so important as is the disease from which he died. It seems to me almost necessary that all hospital authorities should keep their registers after one uniform plan.

Apart from its local distribution, a disease which accounts for, at the very least, 6 per cent. of the total male death rate, and above 7 per cent. of the deaths of women above the age of 45, is one which compels attention. Its undoubted increase also, in recent years, has stirred up the present interest in the disease. In the year 1840 cancer was credited with causing 1 in every 129 of the total mortality, whereas in 1896 this proportion had risen to 1 in 22. Even though we agree to a certain extent with the views of Newsholme and King (¹), that improved diagnosis and a more careful statement of the cause of death may have increased this proportion to a certain extent, yet these could not have raised the proportion almost six times within fifty-six years. The same methods of death certification have been in use during all this time. and throughout this whole period the increase in the number of cancer cases in proportion to the total mortality, has steadily gone on increasing. Apart from statistics, we find Sir William Banks (²) stating that the physicians and surgeons of 1861 were as competent as those of the present day to diagnose cancerous diseases, and that post-mortem examinations were as frequently made then as now, and yet, when he compares the practice of Professor Syme with his own, he finds that cancer has enormously increased.

Statistics have been gathered from nearly all the larger hospitals, infirmaries, poorhouses, asylums, incurable hospitals, etc., for the purpose of this inquiry, but with all reasonable care a large number of patients dying from cancer away from home, either in small institutions or in private, must have been overlooked. It is only through a collective inquiry, taken part in by many observers, that accurate results could be obtained.

I take the opportunity of thanking those medical men and others, who kindly furnished me with statistics of the cases of cancer which occurred in their institutions, and which I had not the opportunity of personally visiting. I appreciate the help which they gave me very highly, as I know that it entailed much labour and expenditure of valuable time in going over their records.

For the purposes of this inquiry I have of course followed the classification adopted by the Registrar-General, and have included under the term "cancer" only those deaths certified as such, or as "malignant disease," sarcoma, or epithelioma. We can readily understand how large a number of undoubtedly cancerous cases escape, when they appear under such vague headings as tumour, growth, stricture of bowels, stricture of œsophagus, chronic obstruction, melæna, ascites, ovarian disease, etc. Greater care should be taken in the filling up of death certificates, and even in the cases where we do not get the opportunity of making a post-mortem examination (and they form the vast majority), surely a more refined and useful diagnosis could be given than a mere description of the patient's symptoms conveyed in technical terms. So long as little care is taken in the filling up of death certificates, so long must we view with regret the efforts of statisticians, in that many of their conclusions must be based on insufficient or even on incorrect data. A careful and accurate certification must form the basis of all reliable statistical work in this connection, and it remains for the general practitioner to assist in this. I have no doubt whatever but that a greater care taken in the granting of death certificates would lead to a still further increase in the mortality from cancer, even in spite of the (comparatively few) cases which might fall to be subtracted through the means of letters of inquiry sent by the Registrar-General. In 1889 these special letters were the means of transferring 421 deaths from indefinite causes to "cancer." In 1899 the number so transferred had risen to 760.

Though I have been able to allocate a large number of people who died from cancer to their own places of residence, still many must have escaped observation. The figures which are given can thus only be considered as approximately correct, but yet I venture to affirm that they afford a more accurate distribution of the cases of cancer in Scotland than appears in the reports of the Registrar-General.

I chose the three years 1895–6–7 for the purpose of this investigation, as these were generally completed when I commenced this inquiry about three years ago. It may be asked, Why did you not take a decennial period, and so give more reliable results over a more extended period? I found the difficulties connected with the three years' investigation ample enough to overtake, and to have increased the number to ten would have made the inquiry impossible to me.

The two maps which I have prepared show the difference between the local distribution of cancer in Scotland, as made up from the Registrar-General's returns, and as corrected according to my inquiry, apportioning those dying away from home to their usual places of residence. The maps are prepared after the manner devised by Dr. Haviland, but slightly modified.

The average of cancer deaths for the three years 1895–6–7, all over Scotland, was 4·023. Each half-degree below this is coloured in a shade of red. Thus for 3·5 one coat of red is given; for 3 two coats, and for 2·5 three coats. The deepest red, therefore, indicates the least cancer mortality. On the other hand, those localities where cancer is above the general average have received one coat of blue for each whole degree—the deeper the blue the greater is the cancer mortality in that area. Thus for 5 one coat of blue is given, for 6 two coats, for 7 three coats, and so on. Those parts left uncoloured have a cancer mortality closely about the normal average.

How does the cancer mortality differ in the map which I have prepared, as contrasted with that made up from the figures given by the Registrar-General? Take for example the county of Edinburgh. Looking at the map, we see that, according to the statistics given by the Registrar-General, this county is what we may term healthy as regards cancer, it having merely the average mortality from cancer for the whole of Scotland. In the city of Edinburgh, however, the cancer mortality is very high, amounting to 5·15 per cent. The second map, however, shows a difference; when the deaths of strangers are deducted from the city of Edinburgh and apportioned to the county of Edinburgh, or to their own towns or counties, we find that the cancer mortality of Edinburgh sinks practically to the normal, being 4·13, while the cancer mortality of the county of Edinburgh is increased to almost 5 per cent. The maps demonstrate at a glance also, that the cancer mortality is raised in Kincardineshire and Sutherlandshire, from about the normal average to considerably above it.

In certain counties which have a cancer mortality above the normal, we find that the correction raises it still higher—as for example Haddingtonshire is raised from 4·25 to 5·59 per cent.; Peeblesshire from 4·68 to 5·07. But the mainland rural district of Selkirk affords perhaps the most remarkable example of the great increase in the cancer death rate due to correction. By the usual returns this appears to be 4·29, while in reality it amounts to almost 6·60 per cent.

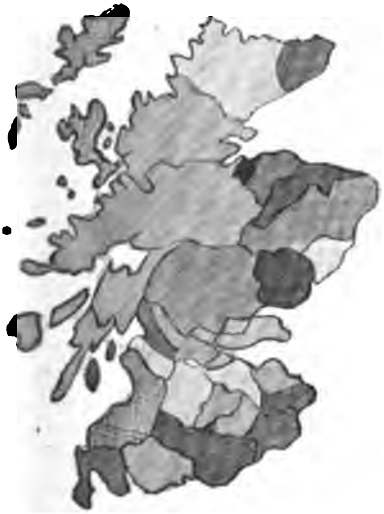

Fig. 1.—Map to show the local distribution of cancer in Scotland, as calculated from the Registrar-General's returns, for the years 1895-6-7. The shaded parts represent localities having a subnormal cancer mortality; the white those with the normal average; and the varying degrees of black indicate the different percentages of cancer mortality (see table).

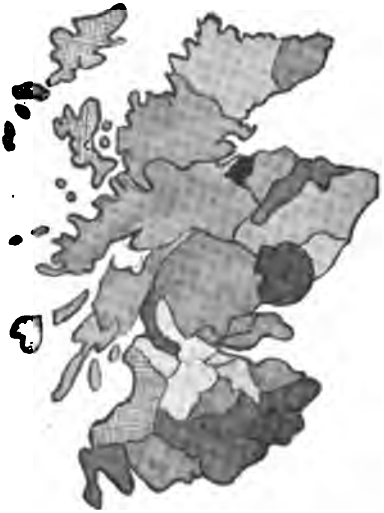

Fig. 2.—Map to show the local distribution of cancer during the years 1895-6-7, but "corrected" as to residence.

Each of the counties of Fife, Clackmannan, and Kinross, Kirkcudbrightshire, Peeblesshire, Haddingtonshire, Dumbartonshire, Inverness-shire, Ross and Cromarty, and Argyllshire, has its cancer mortality percentage increased by correction. Linlithgowshire, Stirlingshire, and the Shetland Isles, which all appeared to have a subnormal cancer mortality, find themselves raised to the normal average.

Nairnshire, however, holds the record in the excessive amount of its cancer mortality. According to the Registrar-Generalth, is amounts to 8·77. By the addition, however, of the deaths of residents out of the county, this becomes the large figure of 9·73 per cent. Neither Orkney nor Shetland are so healthy as the first map would lead us to suppose.

It is the healthiness of the towns as regards cancer which detracts from the unhealthiness of certain country districts, and so leads to a general lessening of the cancer mortality over the whole of Scotland. The table (Plates I. and II.) will afford more information regarding the large towns. In Glasgow we find that the cancer mortality lies a good way below the average, and, when the deaths of strangers in the town are deducted, the cancer mortality is still further reduced to 2·98 per cent. In the same way, the apparently high cancer death rate for Edinburgh (5·15 per cent.) undergoes a reduction to practically the average for all Scotland. Dundee has a relatively low cancer death rate, and this is still further lessened to 4·09 by the correction. Govan and Partick surpass the city of Glasgow in the lowness of their cancer mortality, but this is slightly raised by correction. An apparent subnormal cancer mortality in Leith is actually converted into one slightly above the normal, 4·11 per cent. Paisley, Greenock, and Coatbridge have all low cancer death rates. Perth would appear, from the Registrar-General's returns, to have a normal cancer rate; on being corrected, however, it is raised nearly three decimal places. The question of the greater mortality of cancer in urban, as contrasted with rural, districts, has been most ably and interestingly discussed by Professor de Bovis ([3]). He states that, in Norway in 1897, the relative urban and rural mortality from cancer was as 100 to 80, but he goes on to show that in most large towns a great part of the increased mortality is due to the deaths of strangers from rural districts. Thus, in Leyden, of 533 deaths from cancer, 116 did not belong to the city. In Paris, of 2951 cancer deaths which occurred in 1899, 216 were those of strangers. Professor de Bovis inclines to the belief that cancer appears to be a little more frequent in towns as compared with rural districts, but he would not be astonished if future statistics showed no great difference between town and country.

Our figures tend to show that the reverse holds good in Scotland, and that the large towns are healthier, as regards cancer, than the rural districts.

Coming to the large town districts, we see that Inverness has a high cancer death rate, and this is still further heightened by correction. Forfar, however, far exceeds this with its 7·02 per cent. cancer mortality. An apparent low cancer death rate in Dunfermline is changed practically into a normal one, and in

Kirkcaldy a cancer rate of 5·21 undergoes an increase to 5·81 per cent.

On looking over the mainland rural districts, we find that there is almost a complete cessation of the subnormal cancer death rate. In most districts the figure is very greatly above the normal, and in several the cancer death rate is excessive when taken as a proportion of the ordinary death rate. In every case, also, the correction which I have made has had the effect of raising this rate, and in some cases to a remarkable extent. Subjoined are some of the results:—

	Per Cent.		Per Cent.
Nairnshire	9·73	Elginshire	5·95
Forfarshire	7·74	Kinross-shire	5·93
Bute	7·6	Kirkcudbrightshire	5·84
Dumbartonshire	7·36	Caithness-shire	5·84
Roxburghshire	7·04	Perthshire	5·71
Dumfriesshire	6·7	Fifeshire	5·6
Wigtonshire	6·67	Haddingtonshire	5·58
Banffshire	6·63	Argyllshire	5·52
Selkirkshire	6·60	Clackmannanshire	5·51
Berwickshire	6·40		

If we look for a moment at the physical characters of each county having the greatest cancer mortality, we find that—

Nairnshire, with the highest cancer mortality of 9·73 per cent., is surrounded by counties having very much lower rates. It is a well-wooded and well-watered county, with a gentle slope northwards from its southern boundary. It is mainly a pastoral county, and, geologically, the chief formations are Metamorphic (gneiss) rock and Old Red Sandstone.

Forfarshire, with a cancer mortality of 7·74 per cent., is a county possessing rich fertile plains alternating with mountain ranges, and is freely covered with woods. The rocks are principally Silurian in the north-west, and elsewhere Old Red Sandstone.

Bute.—The island of Bute is made up of hills of no great elevation in the north, but sloping down to low and fertile plains in the south. Of Arran there is no need to speak, as its population is small. As is well known, this island forms a perfect mine to the geologist, containing as it does a greater succession of strata than is found in any other part of our island.

Dumbartonshire.—The most thickly populated part of this county lies low and close to the Clyde. The other parts are mountainous, with forests and much water. The climate here and in Bute is mild and humid, and the chief rural occupation is grazing. Sandstone and limestone form the chief geological formations.

Roxburgh.—Not quite two-thirds of this county are under cultivation, the remainder being hilly. Basic Igneous and Permian rocks form the chief geological features.

Dumfriesshire.—In the north the county is mountainous, but slopes gradually down to the south. A large area is occupied by peat bog, and only about one-third of the area is under cultivation. The climate is, on the whole, mild. Three large rivers drain the county. Geologically, we find chiefly Silurian, but Old Red Sandstone, Carboniferous, and Permian strata are present.

Wigtownshire is characterised by a mild and moist climate, due to the large amount of lake and sea water. Pasturage is the main occupation, as the county is largely composed of bleak fells or high moors. Silurian formations are the ones chiefly present.

Banffshire is mountainous in the south, and slopes as a whole to the north-east. The soil is fertile, and, geologically, we find a variety of formations—as granite, quartz, mica or clay-slate, and Old Red Sandstone.

Selkirkshire rests chiefly on Silurian rocks, and is devoted mainly to pasturage.

Berwickshire is a well-watered and fertile county, more than 60 per cent. of its surface being under cultivation. The hilly regions consist of Silurian strata. In the south, Carboniferous rocks and beds of red sandstone are found.

Elginshire is a well-cultivated county, and, geologically, we find Crystalline rocks in the south, with beds of Old Red Sandstone and Triassic Sandstone.

Kirkcudbrightshire is a mountainous, well-wooded and well-watered county. Only about one-third is under cultivation. The rocks are mainly Silurian, with intrusions of Carboniferous and Granitic patches.

Caithness-shire is made up chiefly of level and bare moorland, and has a damp and chilly climate. In the north the soil is sandy.

Perthshire is generally mountainous, but possesses fertile valleys, and is well wooded and watered.

Fifeshire is an exceedingly well-cultivated county. In the north Old Red Sandstone with Trap rock are found, and in the south Carboniferous strata and Trap rock.

Haddingtonshire is also well cultivated. Geologically, Silurian, Volcanic, and Carboniferous rocks with sandstone are found.

Argyllshire has a very varied geological structure throughout its scattered area. Mica slate is found in the mainland, and trap, quartz, and granite, etc., in the islands.

Clackmannanshire is a fertile county, but has a poor clay soil.

The views as to the causal relations between geological formation and the incidence of cancer are strongly upheld by some. Thus Haviland (4) states that a high death rate from cancer is invariable in districts where there are large rivers which seasonably overflow their banks. He also states that these districts are geologically composed of alluvium, and subsoils of clay of every variety of age and formation. On the other hand, those areas where the cancer mortality is low, occur where the rocks belong to the oldest Palæozoic formation, and especially to the Carboniferous limestone period.

Nason (5) affirms that cases of cancer tend to group themselves chiefly about low-lying land in the neighbourhood of sluggish streams, or where the subsoil is badly drained, and that the closer the habitations are to the stream the greater are the number of the cases of cancer. He thinks that the presence of such localities favours the growth of the cancer parasite, much in the same way as they favour the growth of the malarial parasite.

The conclusions arrived at in the interim report of the Birmingham and Midland Committee (6) are, that there are endemic foci of cancer. These centres are most frequently low-lying, flat, or badly drained districts, or those which border on streams; that there is an almost certain relation between the depth of the surface level of the subsoil water and the presence of malignant disease.

Lloyd Jones (7) comes to conclusions which are very similar, though he does not lay so much stress on the proximity of rivers as causing cancer; he thinks that the prevalence of large trees favours the increase of the disease. Noel (8) believes also that the presence of trees has a relation to the disease.

The Registrar-General, in his fifty-fifth Annual Report for the period 1881–90, states that, in the district within and around Huntingdon and Cambridgeshire, there is a fairly well-defined area in which cancer appears to be exceptionally prevalent. This area is a low-lying piece of land traversed by rivers and streams.

Many other writers come to conclusions which are very similar. Before we could predicate any such facts regarding Scotland, we should require to have much more information of a local character than I have been able to gather.

Nairnshire, for example, with the highest cancer mortality in Scotland, is yet possessed of rocks of the Palæozoic system, while, on the other hand, two fairly large rivers traverse the county.

Forfarshire, also with a high cancer mortality, has very much the same geological structure, though its rivers are small, and the county is, on the whole, well drained.

Dumfries, Roxburgh, Wigtownshire, Dumbartonshire, possess geological features fairly common to all. They all have a more or less damp soil, and are subject to overflows from their streams and rivers. They are all freely wooded. One might go on describing each of the counties of Scotland, but as their physical features are known to most, it seems unnecessary to recapitulate these.

Annual Rainfall in each County of Scotland during the Years 1895–96–97, *together with the Average Rainfall for this Triennial Period.*

The average rainfall over the whole of Scotland for this period amounted to 37·12 in.

County.	1895.	1896.	1897.	Average for these three years.
Haddingtonshire	27·22	25·77	22·79	25·26
Nairnshire	29·88	26·34	20·04	25·42
Caithness-shire	25·74	31·21	25·90	27·61
Elginshire	32·69	29·00	21·70	27·79
Berwickshire	31·46	29·18	26·13	28·92
Fifeshire	27·75	28·37	30·85	28·99
Forfarshire	27·80	28·35	31·01	29·05
Kincardineshire	32·14	29·55	30·56	30·75
Aberdeenshire	34·50	29·18	28·62	30·76
Edinburghshire	33·00	30·41	29·86	31·09
Roxburghshire	34·56	31·73	29·69	31·99
Sutherlandshire	32·20	38·12	26·66	32·33
Orkney	30·20	37·39	29·57	32·38
Banffshire	36·35	32·57	29·63	32·85
Selkirkshire.	34·74	31·11	33·84	33·23
Wigtownshire	29·87	33·48	36·46	33·27
Linlithgowshire	33·44	33·72	33·99	33·71
Lanarkshire.	30·85	33·56	37·03	33·81
Peeblesshire.	34·21	33·25	35·94	34·46
Kinross-shire	34·20	33·80	38·89	35·63
Shetland	35·93	39·71	32·35	35·99
Clackmannanshire . . .	38·66	33·73	38·79	37·06
The following Counties had a Rainfall above the Average :—				
Ross and Cromarty . . .	42·89	47·63	40·82	43·44
Ayrshire	38·31	46·61	47·70	44·20
Bute	40·71	45·75	46·89	44·45
Dumbartonshire	39·68	43·92	49·91	44·50
Stirlingshire	43·20	42·61	49·59	45·13
Dumfriesshire	39·96	42·33	53·57	45·28
Argyllshire (insular) . .	38·37	48·52	49·54	45·47
Perthshire	44·95	42·67	50·95	46·19
Kirkcudbrightshire . . .	42·61	46·25	52·16	47·00
Renfrewshire	45·07	51·33	57·58	51·33
Inverness-shire	49·35	55·66	54·08	53·03
Argyllshire (mainland) .	54·13	62·38	63·00	59·83

Relation of the rainfall to the distribution of cancer.—The question whether the amount of rainfall has any relation to the prevalence of cancer has been often debated. I have investigated this point in the three years under observation. The average rainfall for each county of Scotland, for the three years 1895-96-97, was calculated from the data furnished in Sir G. J. Symon's

"Distribution of Rain over the British Isles" for these three years. The average for each county was obtained by adding together the rainfall observed at each station in the particular county, and dividing the sum thus obtained by the number of the stations in each county. The figures for these years were then averaged. This may not be a very trustworthy method of calculating the rainfall for each county, but it seemed to me to be the best which could be obtained.

The average rainfall over the whole of Scotland, calculated thus, amounted to 37·12 in.

The foregoing table on opposite page shows the annual rainfall for each county of Scotland, calculated in this way.

Few conclusions can be drawn from a consideration of the above table, because, even in those counties which have a small annual rainfall, there are districts where the fall of rain is far above the average. Thus, Fifeshire has an annual rainfall of about 28·99 in., and yet in Beath the figures have been 49, 43, and 53 in. respectively for the three years under consideration. In Edinburghshire, with an average rainfall of 31 in., the district of the Moorfoot Hills exceeds this by about 11 in.

On the other hand, those counties remarkable for their great annual rainfall contain districts where the figures are relatively enormous, as Balquidder in Perthshire, with a rainfall of from 60 to 90 in. In Ross-shire, Glencarron has a rainfall of from 78 to 87 in., and Loch Torridon of from 72 to 94 in. Inverness-shire has many such localities, the chief being, of course, Ben Nevis Observatory, which recorded a rainfall of 133 in. during the year 1896.

Conversely, there are districts in each county where the rainfall is below, in many cases far below, the normal average.

If, now, the maps showing the distribution of the rainfall with the distribution of cancer in Scotland be compared, what do we find? If we look at the counties with the greatest rainfall—*e.g.* Argyllshire, Inverness-shire, Kirkcudbrightshire, Perthshire, etc.—we see that the cancer mortality in these counties is above the average, though not markedly so. Nairnshire, with the highest cancer mortality in Scotland, is yet remarkable for the lowness of its annual rainfall. Kincardineshire and Roxburghshire, with high cancer mortality, have low annual rainfalls.

Those counties with normal cancer rates (Lanarkshire, Linlithgowshire) have each a rainfall considerably below the normal average, while Renfrewshire and Stirlingshire have rainfalls above the general average. Ayrshire, with a very low cancer mortality, has yet a large annual rainfall. These and other conclusions are self-evident on glancing at the maps.

From such a general survey of the rainfall in Scotland we are unable to state that there is any relation between the cancer mortality and rainfall in these counties. Much more detailed and local information would require to be obtained before any definite statements could be made regarding the relation between the rainfall and cancer mortality.

Many of the counties with the highest cancer mortality possess large low-lying areas. In most the soil is damp and the water-courses often overflow their banks, while as a rule they are plentifully covered with trees. On the other hand, however, several fairly flat counties (as Lanarkshire, Renfrewshire, Kincardineshire, etc.) have a low cancer mortality, though they also possess damp soils and have many forests.

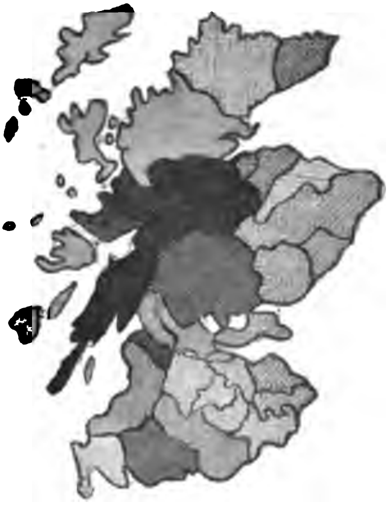

FIG. 3.—Map to show the rainfall in the counties of Scotland, averaged for the three years 1895-6-7. The average for the whole of Scotland was 37·12 in. For each 3 in. or part thereof below this average the counties have had lines drawn across them: thus the most lined represents the driest areas. Conversely, for each 3 in. above the average rainfall a shading of black has been given, and the deeper the colour the greater the rainfall.

The chief coal-yielding districts are the Central Lowlands of Scotland, and these are seen to have a very low cancer mortality. Formerly it was thought that coal, like soot, had an influence in producing cancer in those who worked amongst it. The figures which are given would seem to controvert this idea, however.

The Central Lowlands of Scotland, the Island of Skye, and the Hebrides are seen to be the healthiest as regards this disease, whilst such widely separated counties as Roxburgh, Dumbartonshire, Kincardineshire, and Nairnshire stand out conspicuously on account of the high cancer rate of mortality.

While the Hebrides and Skye are remarkable for their low cancer mortality, it is seen that the adjoining mainland counties of Ross and Cromarty, Inverness-shire, and Argyllshire have a fairly well-marked cancer mortality. The climatic and meteorological conditions of these insular and mainland rural counties is very similar, and so we cannot get any explanation of the marked difference in the cancer rate from such considerations.

The most southern counties of Scotland have generally a higher cancer mortality than the adjoining ones. These counties are usually credited with having a more moist, and perhaps a slightly warmer, climate than the counties to the immediate north. They have not so great a rainfall as the western counties have. These southern counties are all copiously wooded, and possess numerous streams and rivers. The houses are frequently damp; and such a combination of circumstances has been said by Behla to be associated with a preponderance of cases of cancer. The Report of the German Committee for the Collective Investigation of Cancer[1] largely substantiates the assertion of Behla (9); and it also states that in country districts the employment of chemical manures seems to lead to an increase in the number of cases of cancer in the localities where it is used.

Others, again, have referred the increase in cancer to the impregnation of the soil with sewage excreta, and certain germs in this way gain entrance to the intestinal tract. It is affirmed that the notable increase in cancer is contemporaneous with the period of sanitary activity (10).

We find, however, that others state that all low-lying and secondary flooded districts have not a high cancer mortality. Roger Williams (11) cited as an example the area drained by the river Severn as having throughout a low cancer mortality.

I fail to understand the assertion that low-lying and damp localities are concerned in the increase in the number of the cases of cancer, or that the proximity of woods and trees has a causal relation. Year by year the soil is becoming better drained, and the extent and number of damp areas reduced, while at the same time trees and forests are being cut down. We should rather expect a diminution in the number of cases of cancer instead of an increase, were the above theories correct. Some other and additional cause must be looked for.

Speaking generally, we find that as much may be said on the one hand as on the other, but that, so far as our observations as regards Scotland go, we are unable to trace any obvious relation between geological formation, dampness of soil, or rainfall, and the incidence of cancer.

The question of the amount and character of the food taken as being a cause, or at least a predisposing cause, has been largely debated of late years. It is an obvious fact that cancer is most often seen in full-bodied and otherwise apparently healthy individuals. It has been thought that the improved condition of the populace socially, and the consequent increase of food consumed, and especially of flesh food (12), have had a causal relation in the production of cancer. Statistics also go to show that cancer is less prevalent amongst the poorly fed, as in Ireland, or amongst vegetarian races. London, the Thames valley, and the counties adjoining, are said to furnish the largest proportion of cancer cases, and Sir William Banks declares that this is due to the undue luxury shown by this population in feeding.

Others, again, have attempted to prove that peoples who eat much fish suffer to a greater extent than do non-fish eaters, from cancer of the stomach. It is said that the parasites of fish, or the tumours so often found in them, give origin to the cases of intestinal cancer in the human being.

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[1] *Klin. Jahrb.*, Supplement, 1902.

Alcohol, or rather its too free use, has also been credited with being the cause of the increase of cancer, while still others have laid the blame on ham and bacon imported from America. Recently, Dr. James Braithwaite (13) has revived an ancient theory, and asserts that cases of cancer owe their existence chiefly to the too free employment of salt. Along with this, and necessitating the use of this condiment, an excessive amount of flesh is consumed. In rural districts, salted ham and bacon are very largely partaken of, and, Dr. Braithwaite thinks, predispose to the disease. He has no belief in Haviland's theories, and states, as controverting the geological idea, that the district of London, which has a cancer mortality below that of the rest of England, is the poorest and dampest of all (Isle of Dogs, Bethnal Green, Bermondsey, etc.), and that Wales, where the diet is poor and meat rarely partaken of, has also a low cancer mortality.

Arsenic also, which we were led to believe rather tended to cure cases of cancer, has also been laid under the ban.

A glance at the map of distribution of cancer in Scotland does not tend to support the theory of luxurious feeding as being the cause of cancer. The larger towns—Edinburgh, Glasgow, Greenock, Paisley, etc.—are conspicuous from the low rate of their cancer mortality. It is just in those cities where luxury, if it is anywhere present in Scotland, would be largely met with, and where the cancer mortality should be high, were this theory correct. On the other hand, those counties in Scotland where there is a high cancer mortality are chiefly agricultural, and in these we may be sure over-feeding is not the rule. Then, as regards the eating of fish as a cause of cancer, the insular rural districts of Scotland have generally a subnormal cancer mortality rate, and as a rule the outlying mainland rural districts have a cancer mortality not very greatly above the average. It is just in these districts where either a fresh or dried fish diet is most largely partaken of. What applies to the food question, applies as well to the drink question—the towns where drunkenness is in excess do not show any preponderance in the mortality from cancer, but rather the reverse.

Into the parasitic theory of cancer I do not propose to inquire, further than to say that, though we have no absolute proof of its correctness as yet, it is still in the highest degree probable. It may be true that the cancer germ has an existence very similar to that of the malarial parasite (14). It may exist in some animal or vegetable intermediate host, and from these it may gain entrance to the human body. It may be that the sporozoa, so often present in the abdominal cavity of certain insects, have the power of originating cancer when implanted on the surface of the human body. These are all possibilities, but certainly the map of the distribution of cancer in Scotland does not throw any light on this parasitic theory.

In concluding this imperfect communication, I would urge upon the medical profession in Scotland the importance of a combined investigation into the local incidence of cancer in the various counties, with a view to the investigation of the causal relations of this dread disease.

If a central committee were appointed, I feel sure that medical men all over Scotland would willingly furnish returns of cancer cases occurring in their neighbourhood, together with details regarding the physical characters of the districts, the condition of the houses as regards cleanliness, dampness, sanitary arrangements, whether there were "cancer houses" or "cancer areas," etc. These returns would be tabulated by the committee, and much valuable information might thus accrue. In Germany, 55 per cent. of medical practitioners have supplied materials to the Committee for the Collective Investigation of Cancer, and I am sure that, were the same opportunity given to the medical men in Scotland, they would as willingly take part in the inquiry.

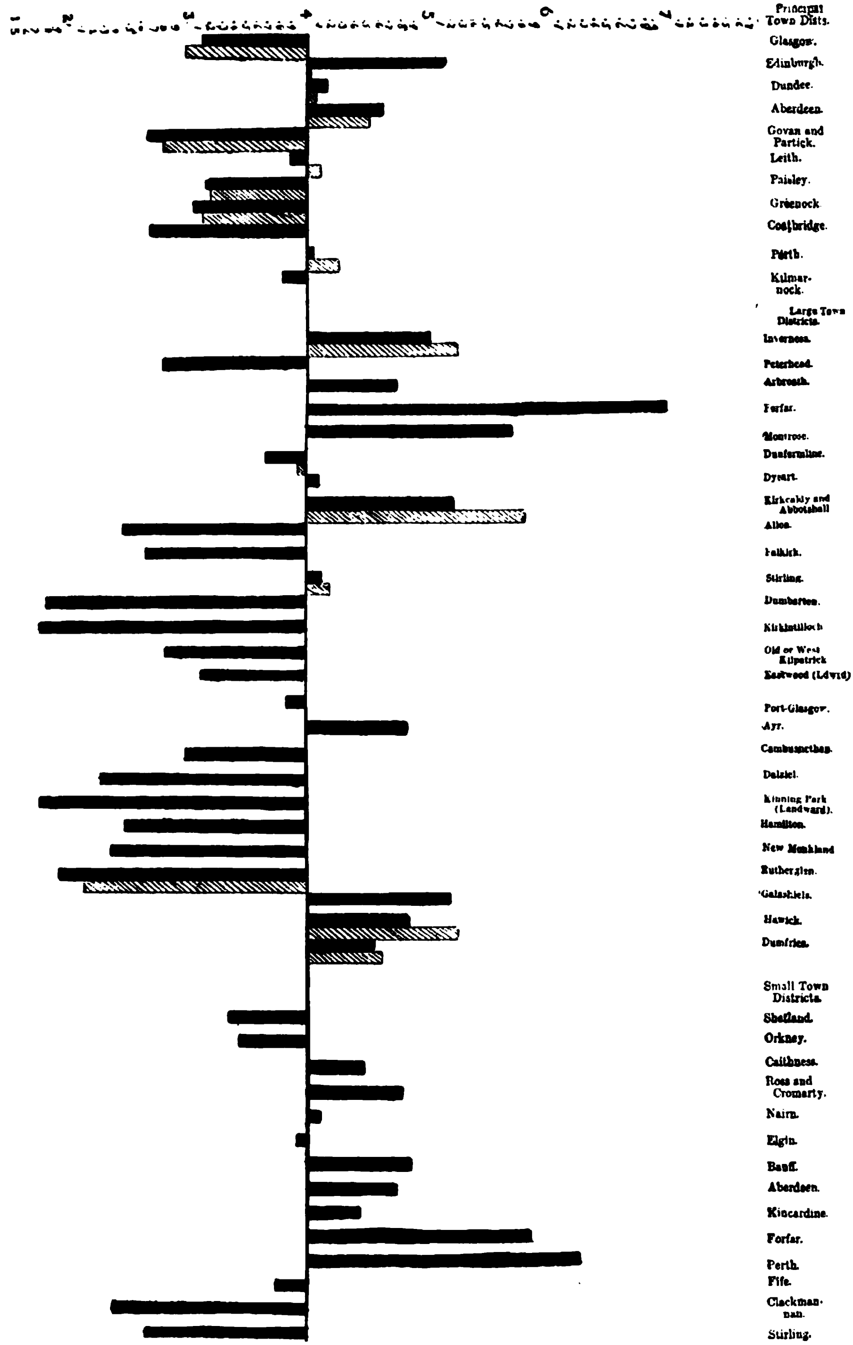
Table showing the Percentage of Cancer Deaths, as calculated from the Returns of the Registrar-General for Scotland (first column), and as corrected. The average for the whole of Scotland for the three years, 1895–6–7, *was* 4·023 *per cent.*

	Registrar-General.	Corrected.		Registrar-General.	Corrected.
Principal Towns—			*Large Town Districts* (continued)—		
Glasgow	3·12	2·98			
Edinburgh	5·15	4·03	Kirkcaldy	5·21	5·81
Dundee	4·17	4·09	Alloa	2·45	...
Aberdeen	4·65	4·53	Falkirk	2·64	...
Govan and Partick	2·65	2·8	Stirling	4·12	4·19
Leith	3·87	4·11	Dumbarton	1·81	...
Paisley	3·16	3·2	Kirkintilloch	1·75	...
Greenock	3·04	3·12			
Coatbridge	2·69	...	Old or West Kilpatrick	2·80	...
Perth	4·06	4·29	Eastwood (Landward)	3·11	...
Kilmarnock	3·80	...	Port-Glasgow	3·86	...
			Ayr	4·83	...
			Cambusnethan	2·99	...
Large Town Districts—			Dalziell	2·29	...
Inverness	5·02	5·25	Kinning Park (Landward)	1·76	...
Peterhead	2·79	...	Hamilton	2·48	...
Arbroath	4·76	...	New Monkland	2·36	...
Forfar	7·02	...	Rutherglen	1·93	2·14
Montrose	5·71	...	Galashiels	5·19	...
Dunfermline	3·64	3·93	Hawick	4·86	5·27
Dysart	4·10	...	Dumfries	4·56	4·61

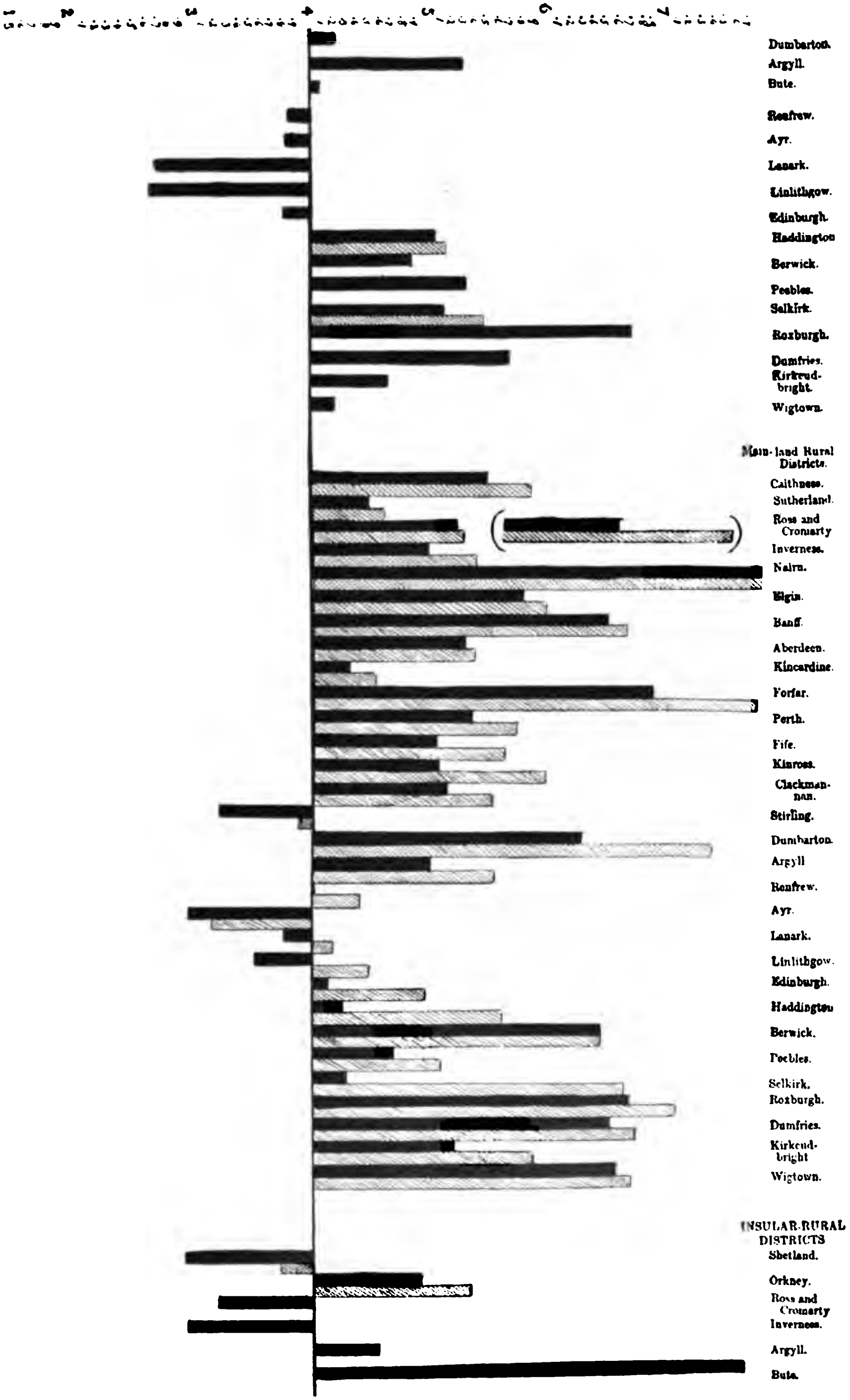
	Registrar-General.	Corrected.
Small Town Districts—		
Shetland	3·33	...
Orkney	3·42	...
Caithness	4·49	...
Ross and Cromarty	4·80	...
Nairn	4·11	...
Elgin	3·92	...
Banff	4·88	...
Aberdeen	4·75	...
Kincardine	4·44	...
Forfar	5·86	...
Perth	6·26	...
Fife	3·74	...
Clackmannan	2·39	...
Stirling	2·66	...
Dumbarton	4·23	...
Argyll	5·28	...
Bute	4·09	...
Renfrew	3·82	...
Ayr	3·80	...
Lanark	2·70	...
Linlithgow	2·62	...
Edinburgh	3·78	...
Haddington	5·05	5·13
Berwick	4·85	...
Peebles	5·30	...
Selkirk	5·11	5·46
Roxburgh	6·68	...
Dumfries	5·65	...
Kirkcudbright	4·65	...
Wigton	4·20	...
Mainland Rural Districts—		
Caithness	5·49	5·84
Sutherland	4·49	4·61
Ross and Cromarty	5·21	5·24
Inverness	4·98	5·39
Mainland Rural Districts (continued)—		
Nairn	8·77	9·73
Elgin	5·78	5·96
Banff	6·48	6·63
Aberdeen	5·29	5·37
Kincardine	4·32	4·54
Forfar	6·87	7·73
Perth	5·34	5·71
Fife	5·05	5·61
Kinross	5·06	5·96
Clackmannan	5·12	5·51
Stirling	3·21	3·90
Dumbarton	6·26	7·37
Argyll	4·98	5·53
Renfrew	4·03	4·40
Ayr	2·95	3·15
Lanark	3·78	4·18
Linlithgow	3·50	4·48
Edinburgh	4·13	4·95
Haddington	4·25	5·59
Berwick	6·40	6·40
Peebles	4·68	5·07
Selkirk	4·29	6·60
Roxburgh	6·65	7·05
Dumfries	6·49	6·70
Kirkcudbright	5·18	5·84
Wigton	6·52	6·67
Insular Rural Districts—		
Shetland	2·91	3·73
Orkney	4·91	5·32
Ross and Cromarty	3·20	...
Inverness	2·93	...
Argyll	4·55	...
Bute	7·61	...

REFERENCES.

1. Newsholme and King.—*Proc. Roy. Soc. London*, vol. liv. 2. Banks.—"Lettsomian Lectures on Cancer of the Breast," *Brit. Med. Journ.*, London, March 1900. 3. De Bovis.—*Semaine méd.*, Paris, September 10, 1902. 4. Haviland.—*Practitioner*, London, April 1899, and other papers in *Lancet*, London; *Brit. Med. Journ.* London. 5. Nason.—*Brit. Med. Journ.*, London, March 12, 1898. 6. Melmoth Scott. *Brit. Med. Journ.*, London, 1900, vol. ii. p. 420; Birmingham and Midland Counties Branch Committee, *Brit. Med. Journ.*, London, 1899, vol. i. p. 816. 7. Lloyd Jones.—*Ibid.*, p. 813. 8. Noel.—"Sur la Topographie et la Contagion du Cancer," *Rev. des mal. Cancereuses*, Paris,



The black lines show the percentage of cancer deaths for the triennial period of 1895-6-7, as calculated from the returns of the Registrar-General. The shaded lines show the same as "corrected," the deaths of strangers apportioned to their own town or county.



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1896–1897, tome. ii. p. 137. 9. Behla.—(*a*) "Ueber vermehrtes und endemisches Vorkommen des Krebses," *Centralbl. f. Bakteriol. u. Parasitenk.*, Jena, 1898, Bd. xxiv. S. 780 *et seq.* (*b*) "Ueber die Ursache des endemischen Krebses," *Cor.-Bl. d. allg. ärztl.*, Weimar, 1900, Bd. xxix. S. 251. (*c*) "Ueber neue Forschungswege der Krebsätiologie," *Centralbl. f. Bakteriol. u. Parasitenk.*, Jena, 1900, Bd. xxvii. S. 313. 10. Mason.—*Brit. Med. Journ.*, London, 1902, vol. i. p. 139. 11. Roger Williams.—"Diseases of the Breast," 1894. 12. Sawyer.—*Lancet*, London, 1900, vol. i. p. 848. 13. Braithwaite.—"Excess of Salt in the Diet, with three other Factors, the probable Cause of Cancer," London, 1902. 14. D'Arcy Power.—"Cancer," *Practitioner*, London, April 1899, p. 418 *et seq.*

RHEUMATOID ARTHRITIS AS A CEREBRO-SPINAL TOXÆMIA.

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The term rheumatoid arthritis has, I venture to think, no valid claim on which might be based a plea for its retention in medical nomenclature. Hallowed though it be by tradition, signs are not wanting that it must soon sink into well-merited obsolescence, and perhaps not the least significant sign of its decadence in popularity is its omission from some of the modern text-books on medicine.

Opinion as to the nature of the disease has for some time past been divided, some ascribing to it a nervous origin, others attributing it to a chronic infection.

Recent research distinctly suggests a truce between the opposing claimants, inasmuch as neither can claim the ability to explain all the clinical phenomena without invoking the aid of the other. Is it not probable that the whole truth—to use a commercialism—lies in a "combine," allotting causality to the inevitable microbe and its tonius on the one hand, and granting to the nervous system the minor rôle of being the medium through which and by which the clinical phenomena are coloured? Both the neural and infective theories have been ably contested, the former more particularly by Kent Spender, and the latter by Bannatyne.

Kent Spender attached great importance to the vasomotor phenomena, and described them in his inimitable manner; others have called attention to their presence. My attention was early called to them as being one of the most salient features of the disease. These conditions of local syncope and asphyxia—most obvious in the extremities—are, I believe, undoubted Raynaud's disease. At first I hesitated to apply the term to them, but further clinical research forbade, to my mind, any attempt at differentiation of the two conditions. In order to justify my claim, that there is no essential difference, I sought to substantiate it by searching for the rarer manifestations of Raynaud's disease in rheumatoid arthritis.

Before I describe my results, as regards these rarer phenomena, I would like to draw attention to the relationship that I believe to exist between the joint changes and the vasomotor phenomena.

Patients may suffer for years from Raynaud's disease before developing rheumatoid arthritis, or, on the other hand, from some other paroxysmal neurosis, notably asthma and migraine. In others, with or without a possible source of infection, *i.e.* influenza "sore throat," symptoms of Raynaud's disease may almost suddenly develop, and be followed in a few days or weeks by definite periarticular swellings, *i.e.* spindle joints. I have known the sequence occur in three weeks. For example, the first symptom may be a condition of local syncope or asphyxia in the ring and middle fingers of one hand. This is, as a rule, accompanied by painful "cramp" or spasm of the flexor muscles of those fingers. In some cases the condition is confined to those fingers, although the others usually participate in a minor degree. The paroxysms may last for fifteen or twenty minutes before relaxation occurs. Shortly afterwards, if the vasomotor paroxysms continue, the joints of these same fingers gradually become the seat of spindle swelling, myotatic irritability is increased, and the flexor tendons at the wrist respond briskly to percussion. All the other concurrent symptoms of Raynaud's disease are present during the paroxysms, *i.e.* lowered surface temperature of the affected area, and some transient modification of sensation, such as diminished tactile sensation, or, what is more easily ascertained, diminished sensibility to pain. In addition there is slight œdema, and the whole attack terminates in sweating over the whole affected area. In brief, we have here a series of Raynaud paroxysms which eventually have the added phenomena of spindle or periarticular swellings.

An extension of the vasomotor phenomena may continue up the forearm, and in the case of the ring and middle digits. Its area of distribution seems to me to indicate spinal rather than peripheral nerve distribution. It extends over the dorsum of hand and forearm, and adheres more or less accurately to the eighth cervical territory (Head), and the sequential sweating also confines itself to the same area, and there is of course the same modification of sensation as occurs in the fingers. In some cases there is, in addition, localised sweating in the centre of the palm, *i.e.* in that area extending from the base of the ring and middle fingers to the wrist, also (eighth cervical). The increased tonicity of the flexors of wrist and fingers seems to point the same way, inasmuch as they are innervated by the same segment.

The skin over the joints of these fingers of course participates in the vasomotor phenomena, and although at first the œdema may appear no more marked in the periarticular region, the successive incidence of paroxysms results in a gradual filling up of the redundant skin over the articulation, and ultimately the periarticular swelling or spindle joint appears, with the overlying skin smoothed out, deprived of wrinkles. After its formation, the spindle joint preserves, in the inter-paroxysmal period, a more or less constant asphyxial tint, and I incline to think that this persistent cyanosis is due to the tension and pressure of exudate on the subcutaneous vessels.

I have before stated that a considerable interval may intervene before periarticular swellings supervene upon Raynaud symptoms; but supposing the periarticular swellings to have appeared and subsided, then, with the incidence of the next series of vasomotor phenomena, the periarticular swelling appears much more quickly, even in two or three days. Now, if in the early days of rheumatoid arthritis these paroxysms of Raynaud type, with the additional phenomena of increased myotatic irritability and periarticular swelling, be watched, it will be seen that the correlated phenomena rise and wane concomitantly, with this qualification of the statement, *i.e.* that the increased reflexes tend to persist longer, and will often persist until the next outbreak of Raynaud paroxysms. If we grant allegiance to the toxæmic origin of rheumatoid, we should expect that the delicate reflex mechanisms would continue to respond to slighter degrees of toxæmia than are adequate to evoke the graver phenomena.

The periarticular swellings, in the earliest stages of their life history, may disappear entirely in the inter-paroxysmal periods; but, later on, they tend to persist and eventually are constant, and any slight increase or diminution in their size is appreciable by the naked eye. A further point in favour of my contention, that the periarticular swellings are only further elaboration of the Raynaud phenomena, is that for some time they may both be confined to the same fingers. It seems to me, therefore, that in the early stages of rheumatoid arthritis we have a constant recurrence of cycles; and this, in my opinion, in time, as it were, wears out the particular segment affected. Now, this is the most important chapter in the life-history of rheumatoid arthritis, namely, the day of small things—the days when all the phenomena are of a fleeting or ephemeral type. Every symptom is transient. The periarticular swellings rise and wane to abolition. The muscular irritability may, in favourable cases (*i.e.* those in which the toxæmia is presumably transient) disappear entirely, the sensory perversions swiftly pass away, and the vasomotor phenomena leave no trace. But too soon the clinical picture takes on more sombre hues; as we pass out of the hope-enlivened sphere of functional disorder into the settled gloom of organic disease, what Sir Thomas Barlow terms "pathological habit" crystallises into a fixed attitude.

I have hitherto used the ring and middle fingers as a type of what occurs in other joints, but, in attempting to describe the transition from the stage of functional disorder into that of structural change, I will, in order to illustrate it better, generalise.

The skin, as a result of the constant recurrence of vasomotor paroxysms, begins gradually to suffer in its nutrition. It desquamates freely at times, loses its suppleness, becomes unnaturally dry and harsh; finally it undergoes, in long-standing cases, atrophic changes, becoming smooth, ivory-white, and glossy. In earlier stages an overgrowth of hair may be found; in the later, as Bannatyne states, alopecia prevails. In many cases disorders of pigmentation are found. Localised œdemas are common in early stages. The sensory modifications are, as Raynaud described, of a transient type; but in the later stages these tend to pass into fixed modifications, and in some very long-standing cases electrical anæsthesia may be present over some spinal area. The dorsum of forearm and the outer side of leg (fifth lumbar of head) are the most peculiarly liable to go on to grave trophic change; and it is over these areas that I have found the more permanent sensory perversions. Scleroderma has been noted by Barlow, Ball, Colcott Fox, Finlayson, etc, in association with Raynaud's disease; and Bannatyne has noted its occurrence in rheumatoid arthritis. In cases that I have seen it had been preceded by Raynaud paroxysms extending over the same areas. In one case the scleroderma involved legs and thighs, also upper limbs; and I cannot help thinking that Raynaud's disease may, if long continued, pass into scleroderma.

In the muscular sphere, the first stage appears to be a condition of undue irritability. Sir Thomas Barlow points out that cramps occur in Raynaud paroxysms, also that fine movements are with difficulty performed; and the same occur in Raynaud's disease, occurring in rheumatoid patients. Again, quoting from Barlow's article in Allbutt: "Raynaud pointed out that the anæsthesia and the paresis of local asphyxia are too transient to be the outcome of primary and permanent changes of nerve trunks and their branches, and that the pains of local asphyxia and its later phase—symmetrical gangrene—are not propagated along recognised nerve paths."

The cramps of rheumatoid arthritis in its earlier stages are extremely severe. Taking a case where the ring and middle fingers alone are the seat of spindle disease, the cramps may be confined to these digits, which may assume the position of a claw hand, or be bent forcibly into the palm. The pain is severe, radiating along centre of front of forearm, and is described as deep-seated; and in many cases more pain is coincidently felt along the dorsum of forearm radiating into these fingers. This pain is more superficial in character, and is attended with objective hyperæsthesia, succeeded by relative analgesia. When more fingers are the seat of spindle disease, the hand may be tightly clenched, so much so that the imprint of nails may be seen on palm. Should the wrist be affected, adduction may occur spasmodically; if the elbow, the arm is forcibly adducted, forearm pronated, and so on. The same phenomena, with modifications, may occur in muscles of head and neck and jaw muscles, also in lower extremities. The spasms may last for variable periods—sometimes days elapse—and great stiffness follows.

I have entered into detail because they are very prominent features of the early stages of rheumatoid, and, secondly, because of their similarity to those occurring in tetany; and this is supported by the fact that you may get Chvostek's symptom. I have obtained it many times as regards various nerves—ulnar, median, sciatic, facial, etc. Now, furthermore, this increased excitability of the nerves has, I believe, some relation to the joints affected; inasmuch as I have been able to find it in one limb and not the other. It is certainly lost after a time, and is, I think, quite confined to the early stage; but in the same way, as I have pointed out before regarding the deep reflexes, this mechanical excitability may persist when the joints have subsided. In a paper shortly to be published in the *Lancet*, I went more fully into the question of reflexes in asymmetrical rheumatoid arthritis.

Again, the electrical reactions approximate to those of tetany; the response to faradism was sluggish, but very brisk to galvanism, and the A.C.C. response was often equal to the K.C.C.

Passing out of this the functional disorder stage of rheumatoid, we find muscular atrophy and contractures supervene, and in some cases paralysis and loss of knee-jerks.

I have known cases like the following:—One knee had been the seat of rheumatoid disease for some time, there was great atrophy of the muscles, complete loss of power to extend the limb, loss of knee-jerk. In the opposite knee, disease was well marked, but of much shorter duration, the muscles were irritable, and the knee-jerk was excessive. In the first-mentioned knee, although voluntary movement was impossible, the joint was freely extensible passively, and the articular surfaces moved smoothly and without grating; and this leads me on to a consideration of the joints.

The swelling at first is mainly periarticular, and the swelling —particularly in case of ankle, wrist, and knee—may spread far beyond the limits of the articulation, and follows more the course of a tendo-synovitis swelling. There is doubtless some slight intra-articular effusion, and in some cases a good deal of effusion —but the reverse condition is the more common; but in chronic cases, the vasomotor phenomena, *i.e.* periarticular swellings and localised œdemas, assume a less prominent position, and a sort of condensation of tissues takes place; and, furthermore, evidences of erosion of cartilage are plentiful.

In support of the statement that both vasomotor and joint phenomena vary concomitantly, I would instance Raynaud's statement, that fibrous ankylosis of the terminal phalangeal articulations may occur in his disease, and also thickening of the processes along the palmar fascia, and that they disappeared if the vasomotor phenomena vanished. Sir Thomas Barlow also confirms his statement out of his own experience.

In support of my statement that the joints participate in the vasomotor phenomena, I will cite the following:—Wardrop Griffith has described cases of Raynaud's disease in which marked contraction occurred, with limitation of movement and some shortening of muscles. Mr. Hutchinson relates the association of Raynaud's disease with what he terms "last joint arthritis." Southey and Weiss have reported cases in which the larger joints were involved.

Barlow, in his article in Allbutt's "System," on Raynaud's disease, narrates a case of symmetrical gangrene reported by Weiss, and quotes his summary:

"There was effusion into the joint cavities and infiltration of connective tissues above and below the joints; once there was synovitis of the metacarpo-phalangeal joint of the right middle finger, followed by tendo-synovitis of the flexor tendons of this finger.

"On one occasion there was effusion into the knee-joint, associated with exudation into the cellular tissues of thigh and knee. Sometimes the joint effusion was preceded by pain—in other cases it was painless. In most cases absorption was rapid, and the constituent parts of the joints returned to the normal state."

The fingers only in this case suffered in the early attacks; but later on, the left knee, right shoulder, elbow, and wrist were affected.

I have seen symmetrical gangrene in rheumatoid arthritis—bullæ forming first, which rupture—with a sanious discharge, and a blackened underlying area. I have seen it affect, in advanced rheumatoid, both heels, with ulceration spreading up outer sides of legs. It was preceded by extreme pain over the affected areas. Loss of nails is fairly common from same process. The ears also may undergo like changes, likewise tips of fingers.

I will now pass on to the rarer manifestations of Raynaud's disease, as they occur in cases of rheumatoid arthritis. Raynaud noted that, either coincidently or alternately with asphyxial conditions in the extremities, transient obscurations of vision occurred. Galezowski confirmed him, other observers noted "temporary alterations in the fundus oculi." Quoting from Barlow's article, the appearances were as follows:—"The central artery and its branches had very clear contours, and they were definitely narrower round the papilla than at the periphery; here and there was a sort of partial constriction; the papilla was very clear, the veins were the seat of remarkable pulsations a little later than the radial pulse, the central vein dilated and elongated itself so notably in the region of the papilla as to simulate a small aneurysm, but the pulsation was also visible in the smaller veins."

Rheumatoid patients often complain of transient obscurations of vision; I, therefore, in company with Mr. Beaumont, of the Bath Eye Infirmary, took the fields of vision of fifty who suffered with local syncope or asphyxia. The fields in all were uniformly contracted. I did not obtain it in cases where the asphyxia was not marked. In order to confirm the vasomotor origin of these troubles, the visual fields were taken before and after inhalation of nitrate of amyl. Expansion followed of a transitory nature, but in no case did it reach the normal periphery. I therefore came to the conclusion that, as a result of the constant recurrence of periods of "blood famine," the remoter periphery of the retina had passed out of the region of functional disorder into that of organic change. Moreover, the fields of the same patients, when taken some weeks after, preserved their original characteristics as regards extent. The outline of the fields was remarkable for extreme regularity of contour,—no marked disparity as regards affection of either halves.

Homonymous hemianopsia of a fleeting type may occur. The degree of retraction in some cases was extreme almost to extinction, in others notable, in others slight. Optic atrophy in some was marked; in others an early stage seemed undoubtedly present. Pulsation was fairly common in retinal veins. During an attack in the extremities, both Mr. Beaumont and myself have observed ophthalmoscopic appearances similar to those described by Galezowski.

There is an interesting correlation existing between these transient obscurations of vision and affection of the temporo-maxillary joint, which is so commonly attacked by rheumatoid disease, *i.e.* that they are prone to occur concomitantly with an exacerbation of trouble in this joint.

The same phenomena occur in the jaw as in the joints of the limbs. Pain radiates over the trigeminal area on that side, hyperæsthesia of skin over same area, followed by relative analgesia; and these sensory modifications involve the mucous membranes, including the conjunctiva, which becomes reddened, is dry, and feels gritty, and, towards close, profuse lachrymation and blepharospasm are present, and the jaw jerk becomes brisk, and clonus may be obtained. The secretions of the mouth are at first scanty, and patients complain of a foul taste; the tongue becomes swollen; and, finally, there is œdema of subcutaneous tissues, extending from nasolabial fold over malar bone and involving eyelid. In a case of this sort which I saw recently, I examined the fields of vision in the quiescent intervals, and found them notably constricted; there was marked optic atrophy, with pulsation in retinal veins.

There is in a fair number of these cases, in addition, ptosis of the upper eyelid. I have seen four cases this week in the Mineral Hospital, in which it is unilateral; and the jaw and ocular symptoms above noted have occurred on that same side. The pupils are of moderate size, react sluggishly to light, and in one of them there appears to be a retraction of the eyeball.

Now, Weiss, in the case of symmetrical gangrene which has been before quoted, reports that in this case there was, in addition, retraction of one eyeball, narrowing of the palpebral fissure, contraction of the pupil, with no reaction to light, and a slight degree of ptosis. There was in this case well-marked Raynaud attacks in the face and ear, coinciding with these eye phenomena. Weiss referred the symptoms to ischæmia of the cilio-spinal region of the cord. The eye phenomena were only well marked on the left side. Weiss also attributed coincident joint affections in this case to some temporary derangement of the hypothetical joint centres in the cord, and regarded them as mild forms of arthropathy.

The association of the eye phenomena with exacerbations of trouble in the temporo-maxillary joint is interesting; and if we regard the eye as a "visceral joint," is it not possible that a parallel condition to what goes on in the retinal circulation, with its sequential changes, *i.e.* degeneration, may also go on in the synovial membrane?

I would have hesitated to make the comparison, were it not for the fact that not only ptosis but paralysis of other external muscles may occur. Now, while absolute paralysis is rare, still paresis and other abnormalities of muscular action, *i.e.* ataxy, dynamic or static, are by no means uncommon. In fact, they would appear to be the early symptoms, which in later stages pass into the graver paresis and paralysis.

As regards pupillary symptoms, Mr. Beaumont has been struck by the frequency with which hippus is met with in the early stages of rheumatoid arthritis. The excursions of the pupil were of high grade, and not to be confused with the rhythmic changes accompanying respiratory movements. Later on, sluggishness of light reflex prevails, with retention of accommodative adjustments, but a reversal of the above abnormalities is present in some cases.

In others—and this is interesting because of the occasional presence of optic atrophy—contraction to light, followed by dilatation, may occur.

In this connection it is interesting to find that recent experiments on the fifth nerve and its intra-medullary roots have shown that the pupil-dilating fibres pass chiefly in the substantial gelatinosa of Rolando, and that contraction of pupil results on section of ascending trigeminal root.

Again, the fleeting trigeminal anæsthesia which accompanies jaw exacerbations may, in long-standing rheumatoid arthritis, be replaced by fixed anæsthesia of the same area. In a case which I saw lately, of five years' duration, beginning after menopause, there were present the following signs:—Left ptosis, marked limitation of movement of internal and external recti, inability to keep the left eye closed against resistance, extreme sluggishness of pupil, notable paresis of left facial muscles including orbicularis oris, atrophy of masseter and temporal muscles, and anæsthesia over left trigeminal area.

Now, trigeminal anæsthesia has been noted in cases of reflex pupillary immobility occurring in tabes dorsalis, and also in cases without symptoms of tabes, and is held to indicate a sclerotic lesion of ascending trigeminal root in the medulla; and the association of ocular palsies with similar affections of the fifth, seventh, and bulbar nerves is common in nuclear affections.

Returning to the affections of the external ocular muscles, in addition to the ataxy, one has to mention the occurrence of transient and alternating ptoses. These ephemeral palsies are indicative of nuclear lesions, either acute or chronic. The acute forms are met with in the toxæmias, sometimes from influenza, syphilis, diphtheria, etc., and may be recovered from; fleeting ophthalmoplegias have been noted in association with migraine and early tabes dorsalis.

These facts are interesting, when we consider how frequent, as antecedents of rheumatoid arthritis, are influenza and "sore throat," and furthermore, how often is the incidence of either in rheumatoid patients followed by a fresh outbreak of joint trouble. Migraine is, according to many, notably frequent in rheumatoid disease.

Noting the prominence of vasomotor symptoms in the extremities in rheumatoid arthritis, is it not possible that these transient palsies may be dependent on similar vagaries in the cerebral circulation, and may not this capriciousness of blood supply lead in time to structural changes in the nerve centres, and consequent paralysis.

We have seen that in the retina functional disorder may pass into structural change, and Thoma has demonstrated that vessels subjected to paroxysmal stress and strain eventually become atheromatous, *i.e.* the atheroma of the temporal artery in long-standing cases of migraine.

The greater rapidity and frequency with which ocular palsies appear and occur in cases of rheumatoid, beginning at the menopause, is suggestive that such quickly progressive forms are due to the fact that degenerations of the arterial tree are more swiftly induced at this period, being less able to withstand the disorderly stress and strain thrown upon them periodically.

In discussing, from a comparative point of view, acute and chronic nuclear ophthalmoplegia, Aldren Turner draws attention to a subacute variety of polio-encephalitis, which he considers forms a connecting link between the two former extremes; and it would seem that the varieties met with in rheumatoid arthritis come more appropriately under this heading, than if relegated to either of the other classes. In a case reported by Kalischer in which there was extensive general paralysis, including ocular muscles, the underlying pathological condition was primarily vascular, with sequential failure of nutrition in the cranial nerve nuclei.

Gowers believes that in chronic nuclear ophthalmoplegia the primary condition is a toxæmia, and that the atrophy of the cells is secondary to disease of the blood vessels. There is yet another disease often associated with rheumatoid arthritis, in which vascular disorders are prominent features, *i.e.* Graves's disease. I have seen as many as ten cases in the hospital at one time in which the conditions were associated.

In some cases the sequence has been as follows—Graves's disease for years, subsidence of the thyroid swellings, supervention of Raynaud phenomena in the extremities, and, finally, well-marked rheumatoid. In a case which I saw recently, the above order was followed; but the thyroid enlargement had disappeared, and she still retained as legacies—a pulse rate of 120, marked tremor, and slight proptosis. In other cases, the Graves's disease has come on after rheumatoid arthritis had been present for possibly years; and finally, in some cases the symptoms and physical signs of both diseases have appeared apparently coincidently—both becoming well marked within a few months of onset. Is it not possible that this commingling of exophthalmic goitre may account for the increased pulse rate that is found in some cases of rheumatoid arthritis.

Again, exacerbations of joint trouble in rheumatoid may markedly alternate with some of the paroxysmal neuroses, *i.e.* asthma. I have lately seen a marked example in a woman, who from her childhood had suffered severely from asthma. Between the ages of 20 and 30 she had recurrent attacks of influenza, and, subsequently to a bad attack, local asphyxia in the extremities and spindle joints appeared; and now the conditions alternate, her joints diminishing palpably during her bouts of asthma, and increasing when the latter is quiescent. I have known hay fever coexist with rheumatoid, likewise epilepsy. Bannatyne notes the frequency of migraine. It is not uncommon to find the following sequence—acute rheumatism, chorea, followed by rheumatoid arthritis.

In the earlier portion of this article I drew attention to the similarity of the cramps occurring in early rheumatoid to those met with in tetany; and it is interesting to note that periarticular swellings and vasomotor phenomena, *i.e.* local asphyxias and sweatings and transient "foggy" vision, also occur in tetany; and furthermore, that they tend to disappear with the paroxysms, the most permanent symptom being the localised œdemas.

Again, the increased mechanical and electrical excitability of nerves, met with in tetany, persists after the muscular spasms have passed off—in fact, for weeks; and, according to Risien Russell, its subsidence tells us whether the attack of tetany is at an end or not.

Is not this very similar to what occurs in early rheumatoid muscular cramps—increased myotatic irritability, exaggerated mechanical irritability of nerves and muscles, vasomotor phenomena, abound; and furthermore, there is a marked tendency to correlated remission and exacerbation as regards these clinical features; and in the same way as the increased nerve irritability and localised œdemas of tetany tend to persist in the intervals of paroxysms, so do they in early rheumatoid arthritis; and furthermore, if in a case of rheumatoid we find, in a limb hitherto unaffected by periarticular swellings, increased deep reflexes, local asphyxia and sweating, we may apprehend an outbreak of spindle joints.

Apart from clinical similitude, we find similar etiological factors. Dilatation of the stomach and gastric ulcer are certainly common in tetany. Bouchard says the same as regards rheumatoid. The same may be said of both as regards acute infectious diseases, and as regards pregnancy, the puerperium, climacteric, and uterine disorders.

The tetany which supervenes during lactation and pregnancy is similar to that which follows extirpation of the thyroid gland, and it is interesting to note that in some cases of rheumatoid, preceded by Graves's disease, atrophy of the gland has occurred before the onset of the joint trouble, with its coincident muscular cramps and vasomotor phenomena. Thyroid extract has been administered with some relief to thyroidectomised patients, and seeing how intractable is rheumatoid arthritis, would it not be justifiable to try the effect in such cases as the above.

Again, in cases of early rheumatoid which have followed quickly on a history of gastric ulcer, dilatation of stomach, or chronic diarrhœa, would it not be just as well if we tried the effect of stomach lavage or intestinal irrigation. Such treatment is advocated for tetany. Dr. Bannatyne believes in the efficacy of intestinal antiseptics—notably guaiacol carbonate, and employs them in rheumatoid arthritis. Iodine and iodide of potassium have also been recommended. As far as my experience goes, they are not of much avail. I have known improvement take place in obstinate sciatica, after I had washed the patient's stomach out; but as yet I have no definite statements to make as to its efficacy in rheumatoid arthritis.

If any such treatment is to do good, its adoption at an early stage of the disease is indicated, during that stage when all the phenomena are subject to remissions and exacerbations. Later on, when trophic phenomena colour the clinical picture, it is too late to do anything but palliate. It seems to me that the first stage, with its fluctuating temperature, rapid wasting, and vasomotor phenomena, etc., is the true rheumatoid; the features of the later stage are simply secondary to changes induced in the cerebro-spinal axis by the previous vascular disturbances, with sequential failure in nutrition of the nerve centres.

Scleroderma has been noted in association with Raynaud's disease, likewise with Graves's disease, and also with rheumatoid arthritis.

Thyroid feeding has been suggested as a means of treatment in scleroderma associated with Graves's disease, and gratifying results have been reported by Lustgarten, etc. Osler thought it had no specific effect, but the cases appeared to be stationary during the treatment. Scleroderma is confined to the later stages of rheumatoid arthritis, and inasmuch as certain cases of the former have been found associated with atrophy of thyroid, would it not be advisable to try thyroid feeding in those cases of Graves's disease in which diminuition in the size of the gland has been followed by rheumatoid arthritis; and as in the cases that I have seen in which the above sequence occurred, there was an intervening period of varying extent during which vasomotor phenomena were prominent, *i.e.* local asphyxia and syncope, it might at this stage be administered with some chance of success.

Lodge, at the recent Manchester Congress, reported cases of Raynaud's disease with constriction of the visual fields, and treated them with suprarenal extract. Abraham, to whose article on scleroderma I am indebted for all the above details concerning scleroderma, states—"The association of scleroderma with certain other lesions may possibly have some etiological significance"; and in this connection draws attention to the abnormal and irregular pigmentation in some cases, and adds that in a few cases degenerative changes have been found in one or both suprarenal capsules. The same author states that "several cases have presented the phenomena of Raynaud's disease both in the earlier and later stages."

These facts are interesting, when we bear in mind the frequency with which rheumatoid arthritis is associated with pigmentation and vasomotor phenomena. The futility with which we treat rheumatoid arthritis when well marked, will, I hope, justify the above speculations. Thermal waters, massage, electricity, etc., are invaluable adjuncts; but, unaided by other means, they fail to remove the toxæmia which lies at the back of the disease.

I would record my grateful thanks to the honorary staff of the Royal Mineral Hospital, and likewise my great indebtedness to Dr. Beaumont of the Bath Eye Infirmary, for much help as regards the ocular phenomena.

SYPHILIS AND LIFE ASSURANCE.[1]

BY BYROM BRAMWELL, M.D., F.R.C.P.Ed., *Physician, Edinburgh Royal Infirmary.*

THE main question to be determined is—*Does syphilis tend to shorten life?* In other words, has a man who has had syphilis the same expectation of life as he would have had if he had not had syphilis? Until this fundamental question is decided, and the further question—which is much more difficult to answer—*If so, to what extent does syphilis tend to shorten life?* it is impossible to give a rational and scientific answer to the question—*On what terms should Assurance Companies accept persons who have had syphilis?*

The opinions of different authorities, and the practice followed by different assurance companies, were then referred to. The statements made regarding these points were chiefly based on—(1) An analysis of the statements expressed at the discussion on "Syphilis in relation to Life Assurance," held at the March and May meetings of the Life Assurance Medical Officers' Association, London, in 1896; and (2) upon the practice of fifty-two different life assurance companies in this country.

Personally, Dr. Bramwell did not think that any man who had had syphilis should be accepted as a first-class life. He regarded the man who had had syphilis as a damaged life. He believed that syphilis did tend to shorten life. If we were to take 1000 persons who had had syphilis, he did not believe that they would, on an average, live as long, or anything like as long, as they would have lived if they had not had syphilis. Speaking generally, he thought that, in every case in which a history of constitutional syphilis was disclosed, an extra should be imposed. There were, of course, some exceptions.

Statistics of assurance companies afforded no evidence as to the mortality from syphilis, and as to the effects which syphilis had on longevity. In order to arrive at some sort of conclusion from such statistics—but it was a very imperfect conclusion, for it necessarily was a large under-estimate—we must pick out the diseases, such as tabes, general paralysis of the insane, and aneurysm, which were believed to be due, in a large proportion of cases, to syphilis, and to see how many deaths were due to such diseases.

The different ways in which syphilis may kill and shorten life were then considered. When death was *directly* due to syphilis, it was almost always the result of tertiary lesions. The date at which typical tertiary lesions are developed after infection was of great importance for insurance purposes. The statistics of Naunyn on this point were quoted, and Dr. Bramwell's own experience given. In 107 cases of grave cerebral and spinal syphilis, in which the time of the onset of the disease of the nervous system after infection was definitely ascertained, 12·1 per cent. occurred during the first year, 40 per cent. occurred during the first five years, and 68 per cent. during the first ten years, after infection.

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[1] Abstract of a paper read before the Medico-Chirurgical Society of Edinburgh, December 3, 1902.

Tertiary lesions of the brain, spinal cord, the great arteries, the liver and heart, were directly fatal in a considerable proportion of cases, and even if they did not produce an immediately fatal result, it was probable that in a large proportion of cases they either directly or indirectly materially shortened life. Dr. Bramwell had seen a considerable number of cases in which cerebral syphilis had proved fatal; several cases in which spinal syphilis had proved fatal; and a very few cases in which death had resulted from undoubted tertiary lesions in the larynx, liver, and heart. It was probable that tertiary lesions occurred in about 10 per cent. of all cases of syphilis; and if it were granted that the expectation of life in every one of these cases was shortened by ten years, one arrived at the conclusion that, on an average, in every case of syphilis the expectancy of life was shortened by one year as the result of typical tertiary lesions.

Authorities on insurance had not been in the habit of including aneurysm amongst the typical tertiary lesions; they would therefore be subsequently considered.

Most observers seemed to think that the mortality from syphilis was almost entirely the result of typical tertiary lesions. Dr. Bramwell thought this view was a mistake. He thought that probably only a small part of the mortality from syphilis was due to this cause; a much larger mortality was probably due to aneurysm of the aorta, to aortitis and resulting aortic incompetence, to the para-syphilitic lesions (general paralysis of the insane, and tabes), to cirrhosis of the liver, and to arterial degeneration due to syphilis, etc.

As regards tabes, it might safely be concluded that in at least 75 per cent. of the cases the fundamental cause was syphilis. It was often supposed that the period of time which elapsed between the syphilitic infection and the development of tabes was long. Dr. Bramwell's observations showed that in many cases it was less than was usually thought. In a series of 162 cases of tabes which he had observed, the date of the syphilitic infection and the first symptoms of tabes were definitely ascertained in ninety-five cases. In 14·8 per cent. of these ninety-five cases, the first symptoms of tabes developed during the first five years; in 41·1 per cent. during the first ten years; and in 67·4 per cent. during the first fifteen years after infection. It was often also supposed that a fatal result in tabes did not, as a rule, occur for many years after the development of the disease. Dr. Bramwell's observations showed that in many cases the total duration of the disease was much shorter than is usually supposed. In thirty-two fatal cases which had come under his own observation, the average duration of the disease was 8·87 years. In seventeen of these thirty-two fatal cases, in which the exact date of the syphilitic infection was definitely determined, the expectation of life was diminished by 270 years. In other words, in each of these seventeen fatal cases the expectation of life was diminished on an average by 15·88 years.

As regards general paralysis of the insane, it might also be asserted that in 75 per cent. of the cases syphilis was the fundamental cause. General paralysis of the insane was almost invariably fatal; it generally terminated within from two to six years. Taking the statistics of the Scottish Widows' Fund for the seven years 1888–1894, there were fifty-two cases in which death was due to general paralysis of the insane; the average age of death was forty-four years. Granting that 75 per cent., or thirty-nine of the fifty-two cases, were due to syphilis, and that in these thirty-nine syphilitic cases the average age at which the syphilis was contracted was the same as in Dr. Bramwell's seventeen fatal cases of tabes, namely, 27·2 years, we arrived at the conclusion that in each of these fatal cases of general paralysis of the insane the expectation of life was, on an average, diminished by 19·99 years.

As regards aneurysm of the aorta, Dr. Bramwell thought that it was an under-estimate to say that 50 per cent. were due to syphilis.

Applying these estimates to the Scottish Widows' Fund: Of the 3658 deaths which occurred during the seven years 1888–1894, six were due to tabes, fifty-two to general paralysis of the insane, and twenty-four to aneurysm of the aorta. Granting that 75 per cent. of the fifty-eight deaths due to tabes and general paralysis of the insane, and 50 per cent. of the twenty-four deaths due to aneurysm, were the result of syphilis, we get 55·5 deaths out of a total of 3658, due to what for the sake of convenience might be termed—syphilitic tabes, syphilitic general paralysis of the insane, and syphilitic aneurysm.

Next, if it were assumed that twenty per cent. of the total 3658 males had had syphilis—and this Dr. Bramwell thought was a high estimate—we arrived at the conclusion that 731 persons who died insured in the Scottish Widows' Fund during the seven years 1888–1894 had had syphilis: therefore one in every 13·1, or 7·5 per cent., of all the syphilitic persons who died insured in the Scottish Widows' Fund during the seven years 1888–1894 died either from tabes, general paralysis of the insane, or from aneurysm.

Further, if it were estimated that, on an average, in each of these persons the expectation of life was shortened by eighteen years, it followed that in every syphilitic person who died insured in the Scottish Widows' Fund during the years 1888–1894 the expectation of life was reduced by 1·3 years.

But the diseases hitherto considered—(*a*) Typical tertiary lesions, (*b*) tabes, (*c*) general paralysis of the insane, (*d*) aortic aneurysm—were not by any means the only late manifestations of syphilis which are apt to prove fatal. Dr. Bramwell thought that it was certain that a considerable number of cases of aortic valve disease, probably some cases of cirrhosis of the liver, and perhaps some cases of cirrhosis of the kidney, were the result of syphilis. It was obvious that, if this opinion were correct, there was here a very large additional syphilitic mortality.

Further, there could be no doubt that some—probably, taking them as a whole, a not inconsiderable number—of the deaths which were certified as cerebral softening, apoplexy, hemiplegia, insanity, myelitis, paraplegia, atheroma, sclerosis of the coronary arteries, angina pectoris, myocarditis, laryngitis, etc., were the result of syphilis.

Again, when the profound, widespread, and very persistent effects of syphilis were remembered, it was not unreasonable to suppose that in some cases syphilis is the cause of arterial degeneration and prematurely senile changes, which may either (*a*) directly shorten the longevity of the individual, or (*b*) predispose to the development of intercurrent diseases, or (*c*) so lower the vitality and resisting power, that, when intercurrent disease is developed, it is more likely to prove fatal than otherwise would be the case.

Taking all these considerations into account, it was reasonable to conclude that the longevity of syphilitics, who were otherwise healthy when they presented themselves for insurance, was on an average shorter, probably considerably shorter, than their longevity would have been if they had not had syphilis.

A statistical inquiry, to be made by the different assurance offices throughout the world, was suggested in order to definitely settle this point.

Up to this point the author had been speaking of cases in which, but for the history of past syphilis, the proposer was healthy, and in which the occupation, habits, family history, circumstances, and surroundings are satisfacory, but in many cases there was a flaw or some unfavourable circumstance with regard to some of these points. Further, he had said nothing with regard to the influence of treatment in preventing tertiary and para-syphilitic lesions; and as to other questions, such as the severity and duration of the secondary symptoms, the condition of health of the children born after the syphilis was contracted, which have to be taken into consideration in deciding on what terms cases in which syphilis was disclosed or detected should be dealt with. Time did not permit him to consider these points in detail, but the following were suggested for discussion:—

1. The influence of mercurial treatment in preventing tertiary and para-syphilitic lesions.
2. Do the severity and persistency of the secondary symptoms afford any guide as to the subsequent course of the case?
3. What importance should be attached to the condition of health of children born to the proposer after the syphilis was contracted?
4. When a history of syphilis is disclosed, the importance, for the purpose of assurance, of regarding—(*a*) The physique and constitutional tendencies; (*b*) the family history (tubercle, gout, insanity, etc.); (*c*) the habits, especially as regards alcohol; (*d*) the occupation; (*e*) the circumstances and surroundings, etc., of the proposer.

SENSATIONS IN DROWNING.

By James A. Lowson, M.B., *late of Hong-Kong Civil Service.*

Numerous professional friends have prevailed on me to publish the following notes of an experience which is fortunately seldom vouchsafed to members of our profession. The details are indelibly impressed on my memory, although at this distance of time (it is now nearly ten years since it happened) the whole affair usually seems a rather bad nightmare. Experiences of drowning, or rather asphyxia from threatened drowning, have rarely been reported by medical men, so my remarks may be of interest. I attribute the perfect clearness of all that happened, to the fact that for some hours we had been expecting to founder, and most of us on board the ill-fated vessel had made up our minds to meet the inevitable—hence the almost preternatural calm with which the crisis was faced. Foundering in deep water had been expected, so that, when the vessel struck a reef, a faint gleam of hope momentarily flashed across one's brain.

The P. & O. S.S. *Bokhara,* ill-fated old tub, sailed from Shanghai, on the usual run to Colombo, with the homeward-bound mails on October 8, 1892, carrying between 130 and 150, crew and passengers. On the night of the 9th the vessel ran into a typhoon, from whose clutches she never escaped. Early in the morning of October 10, all the boats were lost, and the vessel lay in the trough of the sea, absolutely helpless, all efforts to get her to face the sea or run with it proving abortive. All the afternoon the continuous hammering of the big seas on the doomed vessel went on, whilst night came only to add darkness to our other horrors—the faint glimmer of a tallow "dip" being a poor substitute for the electric light. Shortly after ten o'clock, three tremendous seas found their way down to the stokehole, putting out the fires, which had been banked all day, and our position was desperate. The end came shortly before midnight, when there was a heavy crash on a reef, and the *Bokhara* was at the bottom of the Straits of Formosa in less than a minute.

Lying jammed up in a corner of an already wrecked cabin, trying to get a few moments' sleep, the terrific crash at once woke one up to the extreme gravity of the situation, and with scarcely time to think I pulled down the life-belts, and, throwing two to my companions, tied the third on myself, and bolted for the saloon companion, intending to reach the bridge or rigging. There was no time to spare for studying humanity at this juncture, but I can never forget the apparent want of initiative in all I passed. All the passengers seemed paralysed—even my own companions, some of them able military men, had no idea of doing anything. The stewards of the ship, uttering cries of despair and last farewells, blocked up the saloon entrance to the deck, and it was only by sheer force I was able to squeeze past them; and just in time too, as the first heavy sea at once poured down the companion. I saved myself from being washed down with it by standing in a corner of the deck-house, the down-rushing water reaching to the middle of the body. My costume consisted at this time of a suit of pyjamas, a singlet, and the life-belt.

Getting out on deck, I at once made for the bridge, and was climbing up the steps when a perfect mountain of water seemed to come from overhead, as well as from below, and dashed me against the bridge companion, steps and legs seeming to be inextricably mixed up. The same sea washed my head up against the bridge, causing, as I afterwards found, a deep incised scalp wound, about 4 or 5 in. long, and knocking me insensible. The next thing I remember was trying to struggle through the rails of the upper bridge, which was now at the level of the water. The ship was evidently going down rapidly, and I was pulled down with her, still struggling to extricate myself. I got clear under water, and immediately struck out to reach the surface as I thought, but evidently only to go further down. This exertion was a serious waste of breath, and, after what appeared to be ten or fifteen seconds, the effort of inspiration could no longer be restrained, and pressure on the chest began to develop. Probably the most striking thing to remember at this period of time was the great pain produced in the chest, and which increased at every effort of expiration and inspiration; it seemed as if one were in a vice, which was gradually being screwed up tight until it felt as if the sternum and spinal column must break. Many years ago, my old teacher, Sir Henry Littlejohn, used to describe how painless and easy a death by drowning was—"like falling about in beautiful green fields in early summer"; this flashed across my brain at the time, and I said to myself, "Poor old devil, Littlejohn—scarcely so accurate that time." The "gulping" process became more frequent for about ten efforts, and hope was then extinguished. Even although I had seen no land I felt sure there must be some near, and had hoped to get to the surface again to make an effort to reach it. The pressure after these ten (*circa*) rapid "gulps" seemed unbearable, but gradually the pain seemed to ease up as the carbonic acid was accumulating in the blood. At the same time the efforts at inspiration with their accompanying "gulps" of water occurred at longer and longer intervals. My mental condition was now such that I appeared to be in a pleasant dream, although I had enough will power to think of friends at home, and still retain vivid recollections of the clearness of the sight of the Grampians, familiar to me in boyhood, which was brought to my view. Before finally losing consciousness, the chest pain had completely disappeared, and sensation was actually pleasant. What time I had then passed in the water I cannot possibly say—but I should think about two minutes; I was greatly handicapped below water by the previous exertion in getting on deck, and then by the stunning blow on the head, with the result that instead of going down after a full inspiration there was actually very little more than residual air in the lungs. Then the useless attempt to reach the surface would further reduce the time necessary to produce unconsciousness. What happened when inspiration was attempted was that the mouth was immediately filled with water, and, the epiglottis closing or closed down on the larynx, the act of swallowing at once occurred. I think the only time the epiglottis was not close down was during the short expirations which took place after every attempt at inspiration.

The article on drowning in the "Encyclopædia Britannica" says: "The drowned individual struggles to reach the surface of the water in his efforts to respire—as he does so he draws water into his windpipe which provokes cough." I cannot see how it is possible for a man *under* water to cough, and I do not believe that any water will get into the trachea until after unconsciousness comes on. I have made post-mortem examination of scores of drowned bodies in Hong-Kong, and "froth in the trachea" is anything but a constant sign. Where efforts at artificial respiration have been made, one would expect this frothy condition, or if in drowning they had come to the surface once or twice. Captain Marryat's experience of drowning was that the sensations were rather pleasant than otherwise, and Sir Henry Littlejohn seems to have almost used Captain Marryat's words. They are both wrong —Marryat probably forgot about some of his sensations.

To go on with the narrative: consciousness returned, and I found myself at the surface of the water, and managed to get about a dozen good inspirations. A hurried glance showed me the land apparently about 400 yards distant, and I proceeded to utilise first a bale of silk and then a long wooden plank to assist me to the shore. These and the life-belt were of the greatest use also in saving my body from being bashed about on the reef in the tempestuous sea. As it was, feet, knees, and the regions of the anterior superior iliac spines were considerably lacerated. On landing and getting behind a sheltering rock, no effort was required to produce copious emesis. I do not think that much, if any, water could have got down the trachea. I gave it the chance to run out by gravity, while vomiting. It would be interesting to make sure at what stage the epiglottis begins to refuse work. The possibility of pneumonia or bronchitis occurring was soon forgotten in the further exigencies of the situation. Some idea of the journey shorewards may be gathered from the fact that not a trace of the pyjama coat and trousers remained. The singlet, also underneath the life-belt, was in ribbons, while the life-belt itself was considerably damaged.

Our after-adventures were not very interesting, from a medical point of view. All wounds got badly inflamed, as is usual, from the action of the salt water, but I was able to relieve the pain of the gash in the scalp by getting it under a constant "drip" of rain. After the excitement, sound sleep set in, although lying on sharp and rough stones in a ruined hut—the only shelter on a barren and uninhabited island. This sleep had lasted for about three hours when a profuse diarrhœa came on, evidently brought on by the sea-water ingested. Until morning broke all my muscles were in a constant tremor, which could not be controlled by any means. Some days after, I made acquaintance in a Chinese village with a powder, evidently prepared from some of the piper family, which had a very soothing action on the inflamed wounds, the sedative action being supplemented by that of a pint of champagne which a generous mandarin insisted on pouring down our throats. I can vouch for champagne having a good taste after one has been living on sea or brackish water for some days. We had further experiences with piratical gentlemen, and had many frights before reaching hospitable quarters in Taiwanfoo in Formosa. Up till this time I had been unaware of the presence of nerves in my body; but the reaction was now too great when sleeping in a comfortable bed, as, late in the evening, a nightmare led to my having a severe struggle with the bedroom furniture, finally taking a "header" out of bed through the mosquito curtain, and coming to grief on the floor, where my kind hosts found me, and afterwards planted me back in bed.

I have been in many other serious ship and train accidents, but none has left such a vivid impression on my memory as the one I have narrated. Looking back on it now, I am surprised at what must have been extraordinary rapidity of cerebration, resulting in actions which even an armchair-by-the-fire sailor could not improve on—with the one exception of commencing to strike out under water instead of conserving one's wind. The excruciating agony of the pressure was dreadful. I have lately had the doubtful pleasure of suffering and recovering from an acute pneumohydrothorax, where the pain again was of an agonising nature. Here the pressure was from the interior of the chest, but its character was very similar to what I have described—although, in the hydropneumothorax, the severe heart cramps lent additional éclat to the proceedings, which moreover could be partially mitigated by being able to roar out, a relief which could not be indulged in under water. The pleasant dreamy sensation, coming on just before unconsciousness, was only to be expected; but I hope Sir Henry Littlejohn won't again describe death by drowning as a pleasant death. The life-belt saved my life in two ways—bringing me up to the surface just in time, and preventing me being disembowelled on the rocks; and, were I in the same position again, I would certainly not have my boots off in such an emergency; the few survivors who had their sea-boots on came out comparatively unhurt, as they were able to wade most of the way ashore over the jagged reef, whereas I had rather a rough swim for about a quarter of a mile.

Surprise has been expressed at my statement, that the ship foundered in a minute. I repeat that, between the time of the crash and the blow on my head, only about one minute elapsed, and I am confident that I could do all I then did in forty seconds now or even in thirty seconds. I learned, through the divers engaged in salving the gold on board, that the whole of the starboard side of the vessel had been ripped out, and this would easily account for the rapidity of the foundering. The personal character of this narrative must be my apology for the frequent use of the first personal pronoun.

SOFTENING ABOUT THE RIGHT CALCARINE FISSURE, ASSOCIATED WITH LEFT HEMIANOPIA.[1]

By J. Arthur Perdrau, M.B., *London.*

The interest in the lesion about to be described lies in its very limited character and its accompaniment of well-defined hemianopia towards the opposite side.

Clinical account.—Patient was a female, æt. 69, suffering from dementia. On the medical certificate it was stated that she had illusions of sight. According to the case-book notes, for which I am indebted to Dr. E. Birt, she manifested, after admission, great difficulty in understanding what was said to her. Her memory and reasoning capacity were much impaired, and she appeared confused. Four weeks after admission, it was noticed that she did not recognise any one approaching her from the left, but was immediately conscious of any one appearing on her right. Some rough perimetric observations were made, which confirmed the conclusion that she had left hemianopia. Two and a half months after admission, and six weeks after the hemianopia was noticed, patient gradually passed into a comatose state and died.

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[1] From the Pathological Laboratory of the West Riding Asylum, Wakefield.

Post-mortem examination.—On removing the skull-cap and opening the dura mater, the pia arachnoid was found to be opaque and thickened at the vertex. The subarachnoid space was distended with a considerable amount of clear fluid.

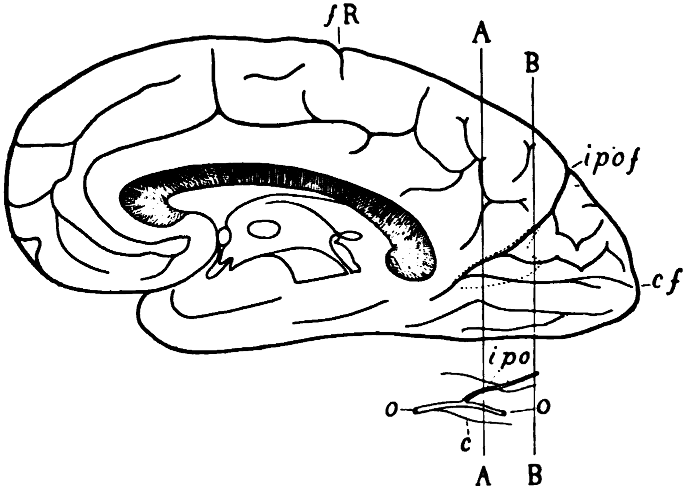

FIG. 1.—Right hemisphere seen from the mesial plane. There is a slight wasting of the gyri with widening of the sulci. The dotted lines indicate the situation of the softening in the occipital lobe, only a small part of which reaches the surface. AA and BB indicate the planes in which Figs. 2 and 3 respectively are made. Below is seen a diagram of the occipital artery and some of its branches, the relation of which to the planes AA and BB is preserved. The occluded portion of the internal parieto-occipital artery is represented black. The area of softening is supplied by minute twigs arising from this portion of the artery; hence the small size of the affected area. *f.* R., fissure of Rolando; *i.p.o.f.*, internal parieto-occipital fissure; *c.f.*, calcarine fissure; *i.p.o.*, internal parieto-occipital artery; *o.*, occipital artery; *c.*, calcarine artery. (One-half nat. size.)

The brain (weight, 1215 grms.) exhibited wasting of the cerebral convolutions, especially in the frontal and parietal lobes, with corresponding widening of the sulci. No lesion could be discovered on the outer surface of the brain, but on the median aspect (Figs. 1, 2, 3) there was an area of softening 2·5 cms. long, 1·25 cms. in breadth, and 2·5 cms. in depth, situated in the grey mattter of the anterior portion of the calcarine fissure, as well as at the junction of this fissure with the internal parieto-occipital sulcus, along which the softening extended for a short distance. The lesion extended in depth as far as the posterior cornu of the lateral ventricle, as is shown in Fig 2, and involved the apex of the cuneus and adjacent portion of the lingual convolution.

The lateral and third ventricles were dilated. The optic radiations were equal on the two sides, as were also the external geniculate bodies. There was no microscopic alteration in the cerebellum, pons, medulla oblongata, or spinal cord. The optic nerves appeared rather small; the other cranial nerves were normal in aspect.

The arteries at the base of the brain were very atheromatous.

The body was well nourished. The valves of the heart were healthy, and the root of the aorta free from atheroma. The kidneys exhibited interstitial nephritis, not considerable in degree. The remaining viscera do not call for special note.

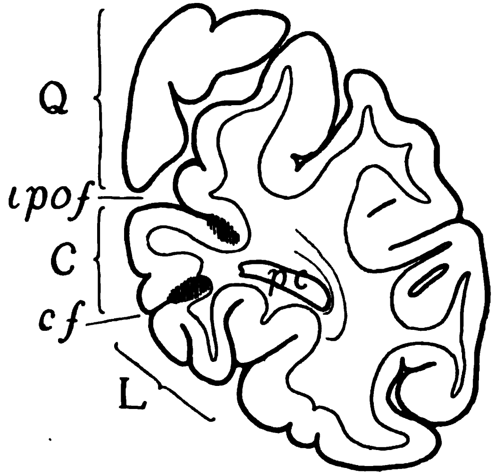

FIG. 2.—Frontal section of right hemisphere in the plane AA, Fig. 1. The area of softening is shaded. Q., præcuneus; C., cuneus; L., lingual convolution; *p.c.*, posterior horn of lateral ventricle. The other letters as before. (Of nat. size.)

Microscopical examination.—The conclusions arrived at by naked-eye examination were checked by microscopical sections made in the planes A and B, Fig. 1. The grey matter at the edge of the softened area exhibited nerve cells arranged in layers, which were little different from those present in the healthy cortex of the occipital lobe in the situations examined. The nerve cells were not markedly altered in aspect. There were many neuroglia cells and fibres at the edge of the softened area. The neuroglia was, however, generally increased in the cerebral cortex. The softened area itself, shaded black in Figs. 2 and 3, contained numerous small round cells, mostly mononuclear, the nucleus being sometimes small, sometimes larger and elliptical. Many of these cells had abundant protoplasm, and some of them contained brown pigment, apparently derived from the destruction of red blood cells. Among these cells were found numerous blood vessels, large and small, a few of the latter being surrounded by an aggregation of small cells.

No neuroglia fibrils or spider cells were present among the small cells. In the softened area the nervous tissue was in places wholly destroyed; in other places there were some remains, more or less abundant, of nerve elements. By Marchi staining, an abundance of degenerated products staining black were seen. The protoplasm of the infiltrating cells was found to be studded with black granules when osmic acid staining was used.

The internal parieto-occipital branch of the occipital artery, arising from the right posterior cerebral, was obliterated for a distance of 8 mm. from its origin (Fig. 1), the diminution in calibre being partly caused by atheromatous thickening of the intima, and partly by delicate connective tissue, containing thin-walled vessels; and numerous round cells occupied the remainder of the interior of the artery. The atheromatous thickening varied in different situations; it reduced the lumen of the vessel to from one-third to seven-eighths of the normal. The small cells were ranged in columns, and contained, as a rule, very little cytoplasm. The delicate connective tissue, lying within the intima, in the obliterated portion of the artery, was evidently due to the organisation of a thrombus forming in this situation.

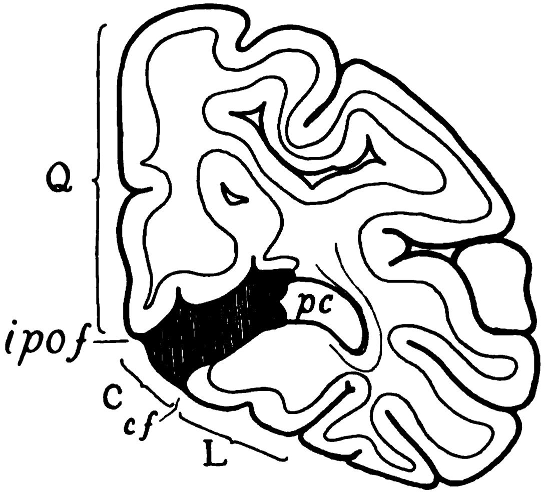

FIG. 3.—Frontal section of right hemisphere in the plane BB, Fig. 1. The area of softening, shaded, is divided here into two portions, each of small size. Letters as before. (Of nat. size.)

The softening about the calcarine fissure, at the apex of the cuneus, to which the occlusion of the parieto-occipital artery gave rise, and which is here so limited in extent, is of much interest from its bearing upon the localisation of the half vision centre in the human subject, and for this reason the present observations are put on record. The lesions accord with the observations of

Munk,[1] and subsequently of Steiner,[2] Monakow,[3] Henschen,[4] Sachs,[5] Gillet and Vialet,[6] and others, that vision is localised in a zone of limited extent, situated on the inner surface of the occipital lobe in the grey matter of the calcarine fissure and cuneus, and their immediate neighbourhood, in which region an actual projection of the retina is present.

SUMMARY.—The chief points in the foregoing may be summarised as follows:—

1. The patient exhibited definite clinical evidence of left hemianopia.
2. There was a small area of softening at the apex of the right cuneus and adjoining portion of the lingual convolution, the proper nervous tissue being replaced by connective tissue rich in cells.
3. The softening was due to thrombosis occurring in the right internal parieto-occipital artery, which was markedly atheromatous.

In conclusion, I must express my indebtedness to Dr. Wakelin Barratt for his assistance in connection with this work.

CLINICAL RECORDS.

HENOCH'S PURPURA.

By W. F. MACARTHUR, M.B., *Port-Glasgow.*

THIS somewhat rare disease was first described by Henoch in 1874, and afterwards more fully in his "Lectures on the Diseases of Children," where he gives notes on four cases. He attributes the peculiar abdominal symptoms to purpuric eruptions in the intestinal mucosa, and states the fact that Zimmemann, in a post-mortem examination, discovered gangrenous patches in the mucous membrane of the intestine, due to a narrowing of the smaller intestinal arteries. I met with a case, and the following notes may be of some interest, as it presented features of which I can find no reference in the ordinary text-books:—

CASE.—I was called to see, on 18th August, R. F., æt. 16, a strong, healthy boy; his personal and family history was very good; his mother told me that for the preceding year he had taken a distate to vegetables, and had lived on bread, meat, and tea; and since June had complained occasionally of pain about the umbilicus. In the middle of July and about the 1st of August he had an eruption of purpura on the legs, to which no attention was paid. When I examined him, there was a pretty extensive eruption of purpura round both elbow-joints, on the left thigh and knee; the latter joint was swollen and painful; his lips were swollen, and the gums bled readily; he had no rise of temperature or general symptoms. On the evening of 20th August I was sent for to see him again, and found a great change in his condition; he was in a state of collapse, and complained of intense pain about the umbilicus, especially immediately to the left of it, where there was an elevated patch, apparently due to a localised spasm of the muscle; the rest of the abdominal wall was soft and flaccid. He had vomited during the day immense quantities of bile-stained fluid, in which floated small clots of altered blood that had the appearance of "sheep droppings"; there was constipation, and the symptoms had more resemblance to those of "intestinal obstruction" than of "lead colic," to which it is compared by several writers. His bowels were opened by an enema, and what was passed had the same appearance as the vomit; he had a restless night, and the condition continued till the 28th. Albumin appeared in the urine on the third day, and continued throughout the illness, which lasted for seven weeks, during which time he had five other attacks similar to the first, only not so severe; no more blood being passed, and of shorter duration; they showed a periodicity, lasting for three days, culminating in vomiting of bile-stained fluid, and being followed by an interval of rest of three days. The pain was always referred to the elevated patch on the left of the umbilicus, which was only present during the attacks; it radiated from there up the left side of the thorax; tenderness could be elicited by pressure over the right lobe of the liver and gall bladder and in the right iliac fossa. It was so severe as to prevent sleep during the attacks, and the description given of it as a colic by Henoch and others is not very accurate, as it is localised and constant, with exacerbations; it caused great restlessness, and the only position of comparative ease was when the lad lay on his face. For the first three attacks the pain was not increased by food, but lately it was, and he could only take small quantities. He had a certain amount of pain during the intervals, which he attributed to flatulence; but the acute pain could always be produced by pressure to the left of the umbilicus. On 13th September he had another eruption of purpura on the extensor aspect of his limbs near the joints, in which this time there was no pain. Nephritis was present during the illness, and continued after the attacks had ceased. His heart was dilated, the pulse poor, and he complained of coldness of the extremities. His appetite was fairly good; the bowels constipated for the first three weeks, and then regular.

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[1] *Sitzungsb. d. K. preuss. Akad. d. Wissensch. zu Berlin*, 1890; also "Sehsphäre und Raumvorstellungen," 1891.

[2] *Arch. f. d. ges. Physiol.*, Bonn, 1891.

[3] *Arch. f. Psychiat.*, Berlin, 1892, Bd. xxiv.

[4] "Klinische und anatomische Beiträge z. Pathologie des Gehirns," Upsala, 1894, Bd. i.; "Sur les centres optiques cerebraux," *Cong. internat. de Rome*, April 2, 1894.

[5] "Das Hemisphärenmark des menschlichen Grosshirns," Hinterhautslappen, Leipzig, 1892.

[6] "Les centres cérébraux, de la vision et l'appareil nerveux visuel intracérébral," Paris, 1893.

It is somewhat difficult to treat a disease when almost nothing is known about its causation, in my case, as the boy's dietary had been so faulty for the past year. I thought there might be a scorbutic element in it, and so allowed him fruit, lemon juice, etc., and milk food of different sort. Henoch recommends opium; this was negatived in my case for the condition of the kidneys. For the relief of the pain I tried poultices of different sorts, fomentations, application of belladonna, none of which gave any relief. He thought the pain was eased by a thick layer of Gamgee tissue to the abdomen, fastened firmly with a binder. If the hæmorrhage from the bowel was excessive, it might be worth while trying adrenalin.

SPONTANEOUS EVACUATION OF A PELVIC HÆMATOCELE.

By A. E. Francis, M.R.C.S., L.R.C.P. (Lond.), *late House Surgeon, Royal Portsmouth Hospital.*

Case.—On May 8, 1902, a married woman, æt. 32, was suddenly seized with pain in the lower part of the abdomen. Upon my arrival, twenty minutes later, I found her lying on her back in bed with both her knees drawn up. Her face was pale, and she had an anxious expression. The temperature in the mouth was 100°·2 F., and the pulse 90 to the minute. She complained of severe pain and a feeling of faintness. She gave the following history of her illness:—Four weeks ago she had a similar attack of pain, after which she had passed blood with some small clots. Previous to this she had not been unwell for over two months, and thought that she was pregnant. About a week before the present attack she had become unwell, and lost a large quantity of blood, but she had seen nothing for the last two days.

Upon examination of the abdomen, I found a globular mass occupying the middle line and rising about 3 in. above the symphysis pubis. Per vaginam the os was of normal consistence and not dilated. There was no discharge. Bimanually, a rounded tumour could be detected, occupying Douglas's pouch and extending laterally on both sides, but more towards the left. The posterior vaginal wall was bulged forwards and the uterus displaced upwards. There was distinct fluctuation in this swelling.

From May 9 to May 18 the patient complained less of the pain, although the tumour had slightly increased in size. The temperature during this period ranged from 100° F. to 102° F. On the morning of the 19th she was given a glycerin enema. After this the bowels were moved and acted freely, but she complained of very severe pelvic pain at the time, and this continued for some hours afterwards. The same evening she passed a quantity of blood per vaginam, with clots. She said she at once felt relief from the pain. The discharge lasted three days and then ceased. The temperature on the 21st was 98°·4 F., and it remained normal. A subsequent vaginal examination revealed the fact that the whole of the swelling occupying Douglas's pouch had disappeared, and the uterus was freely movable. With the aid of a speculum, which was passed without undue pain, a red granulating area was observed on the posterior vaginal wall. This, I have no doubt, was the site of the opening through which the blood had been discharged.

From the history I took this to be a case of pelvic hæmatocele, probably caused by the rupture of an extra-uterine gestation Unfortunately the clot passed on the first occasion was not examined. I think the interesting point in this case was the spontaneous method of cure.

FAMILY GROUP OF CASES OF ENLARGED LIVER AND SPLEEN WITH JAUNDICE.

By J. A. ARKWRIGHT, M.D., *Halesowen.*

THE members of the family are J. B., the father, æt. about 38, and two children, Elizabeth B., æt. 16, and Ernest B., æt. 13. The mother is healthy, and there has been only one other child, which died at 6 months old; the mother has had no miscarriages.

CASE 1.—J. B., æt. about 38, coal-carter, formerly collier; at 2½ years old had fever, and was very ill for about one year. Sixteen years ago subject to fainting fits. Negative history of venereal disease or malaria; has never been in a malarial district; always temperate. For many years (fifteen or twenty years) has been subject to attacks of vomiting with yellowness of skin. In 1891 and 1892 was free from these attacks.

September 21, 1893.—The first attack observed by writer occurred; complexion was sallow; conjunctiva slightly jaundiced; much pain in left hypochondrium; the edge of liver felt 2 in. below ribs in right nipple line, and was slightly tender; the dulness reached up to sixth rib. Spleen, considerably enlarged, hard, reaches to level of umbilicus; two nodes felt on it. He was at work again in a few days.

October 1894.—An attack of vomiting and pain in left hypochondrium, with slight but distinct jaundice; at the end of the attack the liver dulness reached from seventh rib to costal margin in right nipple line, 3½ in., vertical height. Spleen, on deep inspiration, measured 7 in. from lower edge to costal margin.

January and March 1895.—Noticed to be very slightly though distinctly jaundiced always; a slight feverish illness in March.

January 1898.—Has been well and able to work without any break for last two and three-quarter years.

September 6, 1899.—Vomiting and severe pain in right hypochondrium.

September 9.—Has continued to work, but has taken very little food for three days; is more jaundiced than usual; temperature, 99°. Liver enlarged and tender, reaches almost to level of umbilicus in right nipple line, and dulness reaches to sixth rib; vertical height, 5½ in. Spleen hard, not at all tender; lower margin reaches well below umbilicus; is decidedly larger than in 1893.

October 29, 1899.—An attack of abdominal pain and vomiting.

October 31.—The lower edge of liver is on a level with umbilicus. Temperature in evening, 97°·2; on November 1, urine dark coloured; looks as though it contained a little bile; a thick deposit of red urates; test for bile pigments negative.

May 1900.—A severe illness, which began with pleurisy at the right base and broncho-pneumonia with fine râles in left upper lobe; right pleural effusion, pericarditis with effusion, and ascites followed in a few days. The temperature was raised to 100° and 101°. Pulse, 120; much œdema of legs occurred, and there was much dyspnœa and cough. Urine was very scanty. There was very marked anæmia. This state of things began to improve after about ten days, but œdema and bronchitis continued.

June 2, 1900.—Was admitted into Queen's Hospital, Birmingham, under the care of Dr. A. Foxwell; it was there noted that on admission he was anæmic and jaundiced, conjunctivæ being also yellow. Temperature, 99°·1. Heart apex-beat beneath fifth rib in nipple line. Absolute dulness to right edge of sternum, and up to lower border of third rib; impulse feeble; sounds distant; no murmur. A to-and-fro friction sound, synchronous with heart beat over cardiac area. Pulse, 86; feeble, irregular. Respirations, 24. Some dulness and moist râles at base of left lung behind. Abdomen rather prominent; firm, enlarged veins here and there on surface; no pain or tenderness; no ascites. Liver edge felt at level of umbilicus in nipple line, feels firm, edge sharp. Spleen much enlarged and very hard; moves with respiration; descends vertically to level of iliac crest; not tender. Pericardial effusion increased till June 15, when four leeches were applied to præcordium, and effusion gradually disappeared.

July 25.—Liver somewhat diminished in size; spleen slightly smaller and harder. Temperature, irregular, varied generally from 97° to 99°. On June 14 it began to rise, on June 15 and 16 reached 101°·2, and returned to normal on June 19.

Blood.—On admission.—Red cells, 2,970,000; slight poikilocytosis; white cells, 41,000; hæmoglobin, 49 per cent.

June 25.—Red cells, 2,760,000; white cells, 18,000; lymphocytes, 11 per cent.

July 10.—Red cells, 3,740,000; white cells, 22,000; lymphocytes, 36 per cent.; hæmoglobin, 52 per cent.

July 25, 1900.—Returned home from hospital.

July 26.—Heart dulness natural; liver edge felt at level of umbilicus in right nipple line. Spleen, larger than in 1899, reaches 1 in. below a line from umbilicus to left anterior-superior spine; has been taking liq. arsenicalis in increasing doses for about a month; is now taking 15 minims *ter die.*

July 29, 1900.—Another attack of broncho-pneumonia, with temperature 102°; pulse, 120; respiration, 40. Increase in heart's dulness towards the right; jaundice, a deeper tinge. After this there was gradual recovery, and in November 1900 he returned to work as a coal-hawker, and from then till now (June 3, 1902) he says he has not had a day's illness, and he has gained flesh. The icteric tinge remains.

Case 2.—Elizabeth B., æt. 16, daughter of above J. B. Said to have always had "good health"; has never menstruated.

In 1895 was found to be pale, with sallow complexion and a very slight icteric tinge of conjunctiva. Liver not enlarged. Spleen very distinctly felt reaching about 2 in. below ribs; feels hard.

November 1900.—Very anæmic; some pains about left hip; slight sore throat two days ago; probably slight rheumatism.

CASE 3.—Ernest B., æt. 11; son of J. B. Said to always look yellow about the eyes whenever he has a "cold."

January 16, 1895.—Slight bronchial catarrh; a distinct icteric tinge of conjunctiva; complexion sallow. Spleen firm, felt reaching about 3 in. below ribs.

January 18, 1895.—Temperature, 102°. Liver edge felt 2 in. below ribs in right nipple line. Spleen hard, reaches to ½ in. below level of umbilicus; jaundice not increased.

June 13, 1898.—Anæmic; slight catarrh and sore throat. Liver not enlarged. Spleen hard; edge felt 1¾ in. below level of umbilicus. No enlarged lymph glands can be felt.

November 3, 1899.—An inflamed hard lump on left shin which followed a slight injury; this is ulcerated on surface. Liver reaches to level of umbilicus. Spleen, unaltered. Urine, 1030; brick-red urates; no bile pigment. The ulcer on skin healed very slowly, and healing appeared to be accelerated by small doses of iodide of potassium.

1900.—He had an attack of subacute rheumatism of joints.

These cases of jaundice with enlargement of liver and spleen occurring in three members of a family appear to be of the same nature as those recorded by Dr. Claude Wilson,[1] and those reported to the Clinical Society in May 23, 1902, by Sir Thomas Barlow and Dr. Batty Shaw.

In this group of cases the chief characteristics appear to be—(1) That three members of a family are affected, and have been for at least seven years. (2) That there is persistent slight jaundice, but febrile attacks occur, during which the jaundice is usually intensified, and there is vomiting, bile was not found in the urine. (3) During these attacks the liver is increased in size, and is tender, and also perhaps the spleen enlarges, but is never tender. (4) The liver regains its natural size between the attacks, but the spleen increases in size progressively, not receding but sometimes apparently enlarging between the attacks. (5) There are long intervals, sometimes over two and a half years, between the attacks. (6) There is occasionally great anæmia and leucocytosis. (7) In two of the patients there were attacks of articular rheumatism, and in the third attacks of pleurisy with effusion, pericarditis and great heart weakness, but without affection of joints. (8) A sluggish ulcer occurred in one of patients.

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[1] *Trans. Clin. Soc. London*, 1890.

REVIEWS OF BRITISH AND FOREIGN LITERATURE.

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Text-Book of Anatomy. Edited by D. J. Cunningham, M.D., F.R.S. Edinburgh and London: Young J. Pentland.

When one reflects, on the one hand, upon the numerous excellent manuals of anatomy which we already possess in this country; the many-volumed "Quain," a library in itself; the admirable recent editions of Morris and Gray; and, on the other hand, takes thought of the yearly decreasing numbers of students of medicine, one is tempted to wonder what is to be the fate of the handsome book with which we are now dealing and of its competitors for public favour. However, this is more a question for authors and publishers than for reviewers and readers, whose business it is to accept, with such gratitude as they may, the goods provided for them by the labours of others. And so we are glad to be able to extend a most hearty welcome to the latest work on systematic anatomy, and to express our very hearty commendation of the same. Whilst we congratulate the authors upon the result of their labours, may we also congratulate the Nestor of British Anatomy, to whom this work has been offered, as a kind of *Festschrift*, by its writers, most of whom have been his pupils, and many his assistants. In our opinion, the most valuable section of the work, at least for the teacher, is that by the editor himself upon the "Central Nervous System," to which the portions relating to the "Morphology and Distribution of the Nerves," by Professor Paterson, form a worthy and most interesting supplement. We have been careful to say, "for teachers," since we are convinced that if students in the ordinary sense at all, then only very advanced students could be expected to master all that is recorded in the portions of the book to which we have alluded. Professor Paterson in a manner warns off the ordinary student by printing his views, which really form a very valuable monograph on the subject, in small type. No doubt the editor felt a difficulty in pursuing the same course with regard to his part of the work, for, as we have just said, to print any part of a book in small type is to close that portion to a large percentage of students. We quite appreciate this difficulty, but we feel at the same time that the student requires careful direction as to the parts of knowledge respecting the central nervous system with which he must be conversant if he is to be a reasonably intelligent practitioner of medicine, and the parts which he may, if he must, leave out of consideration. And with most students there is a "must," for the increase in the number and still more in the mass of subjects of medical instruction renders it perfectly impossible for average brains to assimilate all that one might desiderate even of human anatomy. With this plea for guidance for the student we will couple our own personal thanks to the authors whom we have mentioned, for the luminous contribution to anatomical knowledge which we owe to them, and which will be of the greatest service to teachers and advanced students. Scarcely less praise should be given to Professor Birmingham for his section on the Digestive System. Indeed, perhaps this author deserves greater praise than his fellows, for they have had to deal with parts of the subject in which novelties much more abound than in the region, the well-trodden region, of the abdomen. It is true that of late years our knowledge of this and other parts of the body has been considerably altered and improved by the formalin method—a method which has been applied with great success by the writer of this portion of the book. Whilst fully acknowledging the value of this method and the hidden things which it has brought to light, we have felt at times that it was a method for which too much might be claimed—perhaps, even had been claimed. Professor Birmingham has, however, used it with the utmost discretion; and if any person ignorant of the matter desired to know what was to be learnt by a study on this line, we should gladly and with confidence refer him to such figures as 688, in which the peritoneal relations of the duodenum, pancreas, spleen, kidneys, etc., are shown; 690, the caruncula of Santorini and its surroundings; and 694, which exhibits three varieties of the ileo-cæcal valve, varieties which we are convinced would very greatly surprise any person who had only been accustomed to study this part of the body in dry or in ordinary post-mortem room specimens. To the surgeon and physician, but especially to the former, not less than to the student of anatomy, Professor Birmingham's valuable account of the viscera and their relations may be most warmly commended. We must also express the gratification with which we have looked through Professor Howden's pages on the "Organs of Special Sense." This, again, is an anatomical area, in which the region which must be visited and studied by the ordinary student has to be staked out and indicated. Space does not permit of allusion being specifically made to the other sections of the book, with the exception of that dealing with embryology, nor is it necessary to say more about them than that they may be thoroughly relied upon as up-to-date accounts of the subjects with which they deal. Before passing from them, may we say that we think the paragraphs on morphology and variations might either have been excluded or made more complete. Certain common variations must be mentioned, *e.g.* the abnormal obturator artery, because it is highly probable that the student may be confronted by them in his dissection, but we doubt the advisability of going further than this in a text-book on anatomy. At any rate, if it is decided that such subjects should be included, we think that many more points should have been dealt with. But to return to the section on embryology. This is a subject on which some reasonable text-book was badly wanted, for parts at least of the once valuable volume of Quain are now antiquated. We can commend the embryological part of this book, at least for the present and until further observations render it in its turn out of date. Indeed, our only regret is that it is not possible to purchase this portion of the book separately, for it would be very useful to many students who, being already provided with other anatomical manuals, will scarcely incur the expense of adding to them another large and costly volume. Throughout the book the illustrations—and there are many of them—are for the most part excellent. Some of them might perhaps be described as a trifle too diagrammatic—the student could hardly expect to attain a result such as that shown in Fig. 222, in the course of his dissection; but we admit that there is a danger in making a figure too little of a diagram and too much of a photograph, and therefore rendering it confusing to the student. The coloured figures are generally much to be commended, though we are bound to confess that we find 802 and 803 rather confusing. In fine, we wish every prosperity to the new system of anatomy, and assure those who select it as their text-book that they will find nothing to regret in their choice.

B. C. A. Windle.

The Operations of Surgery. By W. H. A. Jacobson, M.Ch. (Oxon.), F.R.C.S., and F. J. Steward, M.S. (Lond.), F.R.C.S. Fourth Edition. London: J. & A. Churchill.

When Mr. Jacobson's "Operations of Surgery" first appeared in 1888, it at once took its place as the standard book of reference on operative surgery in the English language. This position it has ever since maintained, and the new edition, which is now before us, can only serve to confirm it in its place of pre-eminence. In the preparation of this, the fourth edition, Mr. Jacobson has had the assistance of Mr. F. J. Steward, to whom has been entrusted the revision of the sections on the surgery of the abdomen, the lower extremity, and the spine. The chapters dealing with operations on the ovaries and uterus have been revised and largely re-written by Mr. G. Bellingham Smith. The increased bulk of the work, despite the omission of the special chapters on "antiseptic surgery" and "anæsthetics," which appeared in the earliest editions, has necessitated its division into two volumes, an arrangement which adds to the attractiveness and convenience of the book.

The authors have decided—we think wisely—to adhere to the regional arrangement of the subject matter, an arrangement which was deliberately adopted by Mr. Jacobson in the preparation of the first edition, and which was, to our thinking, one of the most admirable features of his work. Under such an arrangement the student is encouraged and even compelled to refresh his memory regarding the anatomy of each region of the body before beginning the study of its surgery. If we were to venture any criticism on this subject, it would be to say that the descriptions of the operations on the blood vessels, nerves, and tendons of a given region should precede those of excisions of joints and amputations. In this way we believe the anatomical lessons would be more forcibly impressed on the mind of the student, and the work would prove more useful as a guide in the teaching of operative surgery on the cadaver. This plan has to a certain extent been adopted in some chapters, but apparently without any definite or constant method. While on the subject of surgical anatomy, we may express our doubt as to the practical value of the authors' method of giving the relations of blood vessels, by printing the name of the artery in the centre of the page, and the names of the surrounding structures in uniform type on the four sides of it. This may make for brevity and save space, but it is entirely artificial and lacking in scientific precision.

Space forbids that we should enter into a detailed analysis of the different sections of Mr. Jacobson's book, nor is this necessary in a work so well known as that under review. As might be expected, the chapters on the surgery of the stomach and intestine, the liver and gall bladder, the kidney and the thorax, contain most that is new, and they form an accurate reflection of the present day position of the surgery of these parts. Nor can we refrain from remarking on the eminently practical and helpful commentaries scattered throughout these two volumes—for example, those on the conservative surgery of the hand, on trephining for Jacksonian epilepsy and allied conditions, on removal of the breast, on appendicitis, and on the surgery of the bladder, to mention only a few.

In dealing with surgical problems which are still *sub judice*, and with operative procedures the value of which is still undetermined, the authors frequently adopt the simple method of quoting verbatim the words of recent writers, and so, without committing themselves in any way, furnish their readers with material from which to form their own opinions. Much might be said for this plan, but we feel that, in a work addressed to students and junior surgeons, we are entitled to the guidance which the ripe experience of our authors can well afford. The quotations we can find in any "year book," what we want is the judgment of those capable of judging.

Where there is so much to praise, it may seem captious to find fault with trifles, but we must express our astonishment at the continued use, in a classical work like that before us, of the vague and antiquated term "pulpy disease." We had supposed that it was used as synonymous with "tuberculous disease," till we read on p. 81 that one of the indications for excision of the elbow joint is "pulpy disease, where this has resisted treatment in a patient who shows no sign of tuberculosis . . ." Then what is a "weak aseptic lotion"? (p. 17). In preparing saline fluid for infusion into a vein, we are told that "a teaspoonful of common salt is dissolved in water which has been recently boiled." Should not the salt also be sterilised?

We cannot leave this work without a reference to the illustrations, and an expression of our disappointment with many of them. The great majority of those which are original, and of those copied from British and American works, are eminently satisfactory, but the same cannot be said of those borrowed from foreign sources. Compare, for example, the hard, shapeless hand, copied from Farabeuf, on p. 4 of vol. i., with the life-like hands from Fergusson on the opposite page, or that from Heath on p. 10. As illustrations of Dupuytren's contraction, figs. 17, 18, and 19 are not satisfactory. The appearances depicted in fig. 223 of vol. ii. are surely imaginary.

Each volume is furnished with a full general index and a copious index of names—which leads us to remark on the generous recognition given throughout by the authors to the work of other surgeons.

The title-page bears that this work is "intended especially for the use of those recently appointed on a Hospital staff, and for those preparing for the higher examinations." We venture to think that there are few operating surgeons, however wide their experience, who can afford to be without it. For surgeons in the navy and army, and for those practising in the Colonies and mission fields, it is simply indispensable. ALEXANDER MILES.

Manual of the Practice of Medicine. By GEORGE R. LOCKWOOD, M.D. Second Edition, with 103 Illustrations. Philadelphia and London: W. B. Saunders & Co.

LOCKWOOD'S "Manual of the Practice of Medicine" may be considered as being intended as an introduction to the study of medicine, and specially written for the use of beginners. The accounts given of the various diseases are accordingly much briefer than those in the ordinary text-books. The author has done the work well in the main, although we do not think he has always been successful in picking out and impressing on the reader the really important points in the pathology, symptomatology, and treatment of the various diseases. The book is profusely illustrated, and many of the illustrations, especially the temperature charts of various fevers, are decidedly good. Those who wish an elementary text-book on medicine may do much worse than supply themselves with Dr. Lockwood's Manual. But if they do so, we should advise them later on to obtain one of the larger and more complete text-books, and thus fill in for themselves the details which are advisedly omitted from the present work. If the student masters this book, he will have a fair knowledge of the elementary facts of the practice of medicine.

HECTOR MACKENZIE.

A Dictionary of Treatment, or Therapeutic Index. By WILLIAM WHITLA, M.D. Fourth Edition. London: Henry Renshaw.

PROFESSOR WHITLA'S "Dictionary of Treatment" has had such a favourable reception, and has been so widely appreciated, that within a few years from its first appearance it has reached a fourth edition and has been translated into other languages. It is especially interesting to know that even in Far Cathay, where medical science is supposed to be most backward, the Dictionary of Treatment is known and read, for two editions have already appeared in Chinese. The secret of the book's success is that it is thoroughly practical. It contains in a small compass a vast amount of information concerning the treatment of diseases—medical, surgical, and gynæcological. The treatment is sensible and judicious, and in the present edition the author has brought the work well up to date, and has not failed to mention such recent methods and drugs as appear to be really useful. The practitioner is certain to get many valuable and useful hints from the perusal of the book. It stands to reason that in a book dealing with treatment, we should not find ourselves in agreement with everything that the author recommends. We think that in some cases the treatment errs on the side of being too vigorous and energetic. In many cases the general and hygienic measures are of far greater importance than the administration of drugs, and we should have been glad if Professor Whitla had emphasised that fact more than he does. The writer, indeed, we think, sometimes may lead the practitioner to expect more from the drugs than they are capable of yielding. Drugs, no doubt, skilfully and appropriately used, are of the greatest value, but it is most important to know their limitations. There is a good deal of truth in the somewhat cynical remark attributed to a well-known physician of a past generation. He comforted the general practitioner, who apologised that he had not discovered pericarditis, by assuring him that it was just as well, for he might have treated it. The practitioner must ever remember that there is no stereotyped treatment for a disease. Treatment must be carefully adapted to the condition of the patient. Above all, the practitioner must remember that his treatment must be such as will do the patient no harm. There will be little likelihood, however, of this if he make judicious use of Sir William Whitla's book.

HECTOR MACKENZIE.

A Text-Book of Medicine for Students and Practitioners. By Dr. ADOLF STRÜMPELL. Third American edition. Translated from the Thirteenth German edition, by H. F. VICKERY, M.D., and P. C. KNAPP, M.D. London: H. K. Lewis.

A WORK which has reached its thirteenth edition in its author's own country, which has been translated into almost every European tongue, into Turkish and into Japanese, may surely be considered as having achieved complete success, and having attained a position which is beyond criticism. Professor Adolf Strümpell's work may well be regarded as a veteran among current medical text-books. With many generations of medical students it has been the leading favourite. It is certainly one of the best treatises on medicine which have ever appeared from the pen of one man. Although many text-books by a single author have appeared since Professor Strümpell's book first saw the light, there is no one which, in our opinion, can on the whole be considered better. It is, of course, impossible for one man to possess a close and intimate acquaintance with every form of disease, and this in his preface the author modestly admits. In this respect the treatise by various writers, dealing with subjects which they have specially studied, has peculiar advantages. The text-book by one writer, on the other hand, has usually proportion and unity of plan. In Professor Strümpell's book the sense of proportion is well maintained, and the descriptions given of the various diseases correspond to their importance and frequency. On the whole, the section which, we think, is deserving of greatest praise is that on diseases of the nervous system. The accounts of some diseases strike us as meagre and insufficient, notably those of myxœdema and cretinism. We miss any special mention of black-water fever. The book has been, on the whole, extremely well translated, although here and there the sentences are rather Teutonic than English. Useful additions, comments, and criticisms, which appreciably increase the value of the book, have been judiciously made by Dr. F. Shattuck. The morbid anatomy and pathology is excellent. The symptoms of the different diseases are graphically and faithfully described. The account of the treatment is generally adequate, although some difficulty may here and there be experienced by the English reader in understanding some of the remedies recommended, which are taken from German sources. The book is provided with a full index, which, as far as we have tested it, is quite accurate, and is very useful for reference.

HECTOR MACKENZIE.

An Experimental and Clinical Research into certain Problems relating to Surgical Operations. By GEORGE W. CRILE, A.M., M.D., Ph.D. Philadelphia and London: J. B. Lippincott Company.

IN the introduction to this very interesting and suggestive work, the author says: "While surgical anatomy occupies a conspicuous place in literature, surgical physiology, though almost as important, is all but unknown. Unknown, because the physiologic laboratory is a comparatively recent creation, whose important surgical relations are scarcely appreciated."

It has been an article of faith from time immemorial that the surgeon's path lies through the dissecting-room, and it is amongst these uninspiring surroundings that he passes the years that should be devoted to his scientific training.

It is not necessary nowadays to draw attention to the brilliant work done by surgeons who have applied their physiological knowledge to their work in the wards, though it is still necessary to insist on the better scientific education of those who intend to take up surgery. Dr. Crile's book is an example of the practical use to which a physiological training may be put in one's daily surgical work. Certain lines of research were suggested by practical experience in the wards and operating-room. The results of experimental work on the lower animals, carried out on hints thus received, were carefully noted and their bearing on similar cases met with in surgical practice discussed.

One series of experiments has led the author to a practical application of considerable interest and importance. He found that the carotid arteries could be clamped in dogs for a considerable time without producing any ill effects either on the arteries or the animals generally.

He has now applied this method of clamping temporarily the carotid arteries to operations on the head and neck in the human subject, which would entail ordinarily such severe bleeding as to lead to the risk of death from hæmorrhage. The results have been remarkably good. Of eleven operations for such conditions as sarcoma of the parotid, extensive epithelioma of the floor of the mouth, vascular growths, etc., all recovered the immediate effects of the operation, one only dying of secondary hæmorrhage on the thirteenth day. Amongst other subjects worked at may be mentioned a research into the effects of intravenous infusion of saline solution, showing why in certain cases it fails to produce the ordinary results expected of it.

Dr. Crile's book should be studied, not only for the information it contains, but as an example of how work on similar lines should be carried out. G. Bellingham Smith.

Cancer of the Uterus: a Clinical Monograph on its Diagnosis and Treatment. By Arthur H. N. Lewers, M.D. (Lond.), F.R.C.P. (Lond.). London: H. K. Lewis.

In this monograph Dr. Lewers has given us the result of his experience, acquired during the past seventeen years, in the treatment of cancer of the uterus. It is based on seventy-three cases for which he has performed a radical operation, and the value of the work lies in the care that has been taken to verify the nature of the disease in every instance, and to follow its course throughout. Every one who has had any experience of cancer of the uterus will feel how fully justified Dr. Lewers has been in drawing attention prominently to the ravages of this disease, and will sympathise with him in his suggested remedies. That earlier diagnosis on the part of the profession might help matters a little, is possible, but an experience of out-patient practice leads one to the conclusion that advice is most often sought when the disease is advanced. Whether the better education of women generally, many of them of a low stratum of society, in matters of this kind is feasible, is however open to doubt. Though the cures resulting from a radical operation in seventy-three cases may be put as high as nineteen, Dr. Lewers considers that this represents no more than 2 or 3 per cent. of all cases seen by him.

The above figures would indicate the operable cases to be about 10 per cent. This is certainly a low estimate, and may be regarded as a third only of the number that many operators would admit as coming within this category. The small number that Dr. Lewers finds to be operable depends to some extent on the fact that he limits operative treatment to those cases in which reasonable hope exists that, not only the uterus, but the whole growth, may be removed. He does not consider that any benefit results to the patient from the removal of a diseased uterus, when portions of the growth are left behind in the pelvis,—a view which is not shared by a number of surgeons of the present day. As regards the proportion of recoveries, and subsequent freedom from recurrence, this obviously depends on the care with which a selection of cases is made. The point, however, that does stand out clearly from these cases is the favourable result that may be looked for from operations undertaken at an early stage, rather more than a fourth of Dr. Lewer's cases being free from recurrence at periods after operation varying from four to fifteen years.

There is one point in his figures that requires comment, and that is the large proportion of women with cancer of the cervix who have had no children. Dr. Lewers puts it as high as 13 per cent. Winckel found that 1·7 per cent. of his cases were unmarried, but two-thirds of these had had children, a proportion that fits in much more closely with general experience.

Dr. Lewers is to be congratulated on the important series of cases that he has brought together, and on the results obtained. They undoubtedly justify the statement he makes in his preface, that his intention has been to bring into prominence the fact that, if cancer of the uterus is met with at a reasonably early stage, there is a good prospect that permanent relief may be secured by operative treatment.

G. Bellingham Smith.

Regional Anatomy. By Richard J. Berry, M.D., F.R.C.S.Ed. Revised Edition, 3 vols. Edinburgh: Wm. Green & Sons. 1902.

This book, which is primarily intended for senior students, is described as being to all intents a new work, as so much has been added to and re-written of the author's "Essentials of Regional Anatomy," upon which the text is based. It is the author's intention to add, at an early date, volumes dealing with the anatomy of the central nervous system, and the joints and special senses, and so complete the work. There are no illustrations in the book, as, in the author's experience, the system of compelling students to furnish their own figures works successfully. To enable students to do this, the text is interleaved throughout.

The text is in the form of short, concise, didactic notes, and perhaps, on this account, it would be easy to criticise many parts: for example, vol. ii. p. 158, we are told that "were these vessels—the obliterated hypogastric arteries—not present, there would be no false ligaments of the bladder." Again, in vol. i. p. 5, we read that, of the six layers in which, according to the author, the muscles of the back are arranged, "the first two alone are of any importance." This is certainly far from being the case, and the book itself devotes, in another place, some eight pages to the description of the despised muscles.

The handy size of the volumes, the systematic arrangement of the contents, and the opportunities afforded of making notes and diagrams, render the book attractive to students revising their work in the dissecting-room.

A. F. Dixon.

Heath's Practical Anatomy. Edited by J. Ernest Lane, F.R.C.S. Ninth Edition. London: J. & A. Churchill. 1902.

This, the most recent edition of "Heath's Anatomy," differs from the last one, edited by the late Professor Anderson, chiefly in the fact that by the omission of some figures, and of references to surgical operations, the number of pages has been somewhat reduced.

The well-known coloured plates illustrating the anatomy of the arteries from Maclise's "Surgical Anatomy," omitted in the last edition, are reintroduced, and are now inserted in their proper places in the text, and not, as in the earlier editions, placed all together at the beginning of the book. No serious attempt seems to have been made to bring the text into harmony with modern views. For example, we find the account of the arrangement of the peritoneum rendered vague and misleading by the loose use of terms which have in recent years come to possess definite meanings. It is a pity, when so many useful illustrations have been sacrificed for the sake of space, that an old figure taken from Henle's "Anatomie des Menschens," 1874, has escaped, as it gives a very erroneous idea of the peritoneal relations of the uterus. Some errors in the text have escaped revision; for instance, the vasa deferentia are described as passing backwards on the *outer side* of the obliterated hypogastric arteries, and the fourth ventricle of the brain is described as "a serous cavity." In the short account given of the brain, the deep connections of the cranial nerves, most of which are simply traced to the floor of the fourth ventricle, might well have been omitted to leave room for more detail in other parts.

The handy size of the volume, and the concise manner in which the subject-matter is dealt with, make "Heath's Anatomy" suitable for work in the dissecting-room, but it appears doubtful if this last edition is an improvement on the one which preceded it. A. F. DIXON.

La Pratique Dermatologique, Traité de Dermatologie Appliquée. Publié sous le direction de MM. E. BESNIER, L. BROCQ, L. JACQUET. Tome Troisième. Paris: Masson et Cie.

THE third volume of this valuable work has appeared within a year of its predecessor, and neither in the importance of the subjects comprised nor in respect to the fulness with which they are treated, nor the wealth of illustrations provided, does it in any degree show a falling off. Little novel has been added to our knowledge of leprosy in very recent times, but the article dealing with it by Jeanselme and See is abreast of what has been ascertained regarding it. It is otherwise with regard to that on the lichens by Brocq. Various controversial points are stated, with that wealth of philosophical detail characteristic of the author. After an inquiry into what the older writers held to constitute lichen, and a brief history of the mode in which our present conception arose, Brocq enters on a dissertation on his theory of lichenification. By this term he intends to convey the impression of that leathery condition which the skin acquires in certain individuals, and perhaps only in special localities, when scratching is indulged in either on parts previously seemingly quite healthy, or in other cases the seat of eczema or less frequently of other skin lesions. Having discussed the origin and nature of the process, he next draws attention to the circumstances in which it is met with. These he places in a class by themselves, denominated by him "nevrodermites," characterised by circumscribed pruritus with lichenification. It includes examples hitherto referred to chronic dry eczema on the one hand, and to lichen planus limited as to distribution on the other. Every one has encountered cutaneous lesions corresponding in type to those referred to by Brocq, and it has assuredly been a puzzling question to decide to what category such should be assigned. In estimating this, one must allow something for the more mobile nerves of our friends across the Channel; still, analogous cases are not uncommon here, and a good deal may be said in favour of Brocq's view, which is well worth careful consideration. Though he entitles the chapter "The Lichens," yet he is of opinion that there is but one disease to which the name lichen should be attached, namely, lichen planus, and the account given of this follows the accepted lines.

More than two hundred pages are devoted to the consideration of lupus. This embraces lupus erythematosus as well as lupus vulgaris, both being frankly regarded as tuberculous in nature by the modern French school. It follows from this that the subject is handled with a minuteness and amount of detail to be found nowhere else. The author Lenglet has evidently studied the many questions involved with care, and has most exhaustively dealt with it. A perusal of the section allotted to the pathology demonstrates what an intricate theme this is, and how far we yet are from completely understanding it. One point is brought out very thoroughly, the depth to which the interstitial infiltrations extend. This serves to explain the inevitable recurrences, and how profoundly surgical intervention must be carried, to be successful. These recurrences are in part explicable also if we accept the doctrine that the sclerotic tissue, which is the result of the progressive transformation of the lupique neoplasm, is itself tuberculous in character. The treatment of lupus vulgaris comprehends all the methods suggested from time to time, their merits and demerits being honestly apportioned. There is, it is affirmed, no single method applicable to all, and valuable rules are laid down to guide in the selection. There is, however, an evident preference evinced for the method of scarification perfected by Vidal, combined at a later stage with the thermo- or electro-cautery for individual residual nodules. Though a variety of applications for employment after surgical measures are enumerated, one, and that the very best, finds no place: we refer to the zinc ichthyol salve muslin of Unna. In our opinion no dressing approaches that in universal efficacy. Treatment by light and X-rays, though mentioned, is not deeply descanted on, the reader being referred to a previous article by Brocq in the second volume. Lupus erythematosus is discussed with the same prolixity, every known variant being described. As to its etiology, the author's views may be guessed from his summary: "In short, the clinical evidence, the pathological anatomy, some facts of experimentation, our acquaintance with conditions probably similar constituting the group of tuberculides of to-day, prompt us to regard lupus erythematosus as an exanthem or as a lesion, usually, possibly always, tuberculous, and permit the belief that the proof of this will be furnished scientifically." The suggestions for treatment are full and comprehensive, but one underlying principle is laid down, that the rule for guidance may be summed up in three words,—stimulate, soothe, vary. On the whole, perhaps some items of that recommended err in vigour, and lupus erythematosus resents too energetic interference.

The section on alopecia areata, well handled by Déhu, exemplifies how variable may be the opinions held within a brief period concerning a disease about the cause of which little is really known. Surmises constantly oscillate between a neurotic and a parasitic origin, the balance inclining now one way now another. The bacillus of Sabouraud exerted for a time a certain glamour, but this, apparently even in France itself, has already waned, and the tropho-neurotic theory is the one here supported throughout. The latest idea, the dental-reflex one of Jacquet, is fully stated, and if this may account for some examples, "the dentist may prove one of the best auxiliaries in its treatment." If nothing strikingly novel emerges, a most comprehensive study is made of this very frequent and vexatious complaint.

Pemphigus takes up a large space, and is most elaborately and exhaustively canvassed by Brocq, who brings all his infinite capacity for research into play. Commencing by a process of clearing the ground, he shows how many ailments, in course of which bullæ appear, are outside the category of pemphigus, and then, finding himself on a congenial topic, a good many pages are occupied in a description of dermatitis herpetiformis, the aspects of which are further illustrated by a number of well-executed engravings in the text. There are two forms of pemphigus to which new material is contributed. One, acute febrile pemphigus; this he regards with Pernet "as due to an infection of animal origin, provoked by direct inoculation, and seeming to arise in particular from carcases." The other is epidemic pemphigus, which he believes to be very closely allied to impetigo contagiosa, if not actually identical with it. His pronouncement on hysterical pemphigus, a confessedly difficult subject, leaves something to be desired, though a most admirable résumé of facts is provided.

Articles on mycosis fungoides by Leredde, than whom none is more capable of speaking authoritatively on a most obscure disease, and on diseases of the nails by Dubreuilh, are worked thoroughly up to date. That on frambœsia by Jeanselme is particularly interesting at present, in view of the splendid fasciculus dealing with it just published by the Sydenham Society. It is noticeable that Jeanselme is firmly of opinion that it is absolutely distinct from syphilis, and the several diagnostic points are very clearly tabulated. There are numerous other shorter contributions on less outstanding morbid conditions, all of which are equally meritorious.

W. ALLAN JAMIESON.

A Surgical Handbook. By CAIRD and CATHCART. Eleventh Edition.
London: Charles Griffin & Co. Ltd.

To commend this excellent manual is only to echo the popular opinion regarding it. While there are some things that might be well omitted, such as the use of Davy's lever in arresting hæmorrhage, there are many practical details that might be profitably included in a subsequent edition. We might instance Chiene's bandage for fractured clavicle, the bandage for the axilla, Miller's method of reducing dislocations at the shoulder, and the manipulations for reducing congenital dislocation of the hip. ALEXIS THOMSON.

Hernia: Its Etiology, Symptoms, and Treatment. By W. M'ADAM ECCLES. Second Edition. London: Baillière, Tindall & Cox.

AMONG the numerous works on hernia, that by Mr. Eccles has taken a deservedly strong hold on the profession in virtue of its eminently practical bearings, and of the attention paid to treatment. The illustrations are of great teaching value, especially those relating to the application of trusses; they are by far the best we have seen in any book on the subject. ALEXIS THOMSON.

NOTES ON BOOKS.

Roux's *Formulaire Aide-Mémoire de la Faculté de Médecine*, reinvigorated under the editing of Lemanski, has come out in a fifth new dress, cut according to the very latest fashion. In it, the methods and measures recommended and employed by the physicians and surgeons on the staffs of the hospitals of Paris. Arranged alphabetically, to each disease or injury are appended details of the modes of treatment advocated and practised, and of the drugs recommended by them.

St. Luke, Apostle and Physician.—Dr. Clapton, late physician to St. Thomas's Hospital, has written an erudite and professional *Life of St. Luke* (J. & A. Churchill, 1902). In it all the attested facts regarding the apostle, the many more or less hypothetical surmises about him which have been hazarded from time to time by the learned, and the numerous and varied interpretations of disputed textual readings, are both recorded and criticised. A Greek by birth and education, the latter combining religion, medicine, and the humanities, as was the custom of the day, St. Luke especially devoted himself to medicine, became a Jewish proselyte, and went to Jerusalem. It is more than probable that he, although of Grecian extraction, had some Semitic blood in his veins, and counted amongst his ancestors some of the tribe of Ephraim.

The practice of healing in Jerusalem, at the time St. Luke put up his plate, was confined almost entirely to the priests and Levites, who prevented rather than cured, even if the prevention was to no great purpose. St. Luke naturally had to encounter and overcome much jealousy, and it is not surprising to find that after a few years he removed to Nazareth, where he appears to have abode for a number of years. His various journeyings after the Crucifixion can be readily made out from the various records extant up to the time of his journey to Rome with St. Paul; after this date all that is known of his life is based mainly upon supposition. Dr. Clapton identifies him with Antipas, "my witness, my faithful one" of St. Paul, martyred at (probably) Ephesus.

The Art of Breathing as the Basis of Tone Production, by Leo Kofler (J. Curwen & Sons, Ltd.), is a book of American parentage (the present issue being the fifth in America, although only the first English edition), by a New York organist and teacher of the art of singing. It is a book which can be warmly recommended to all those who purpose, aspire, or have to use their speaking or singing voice in other places than the closet. Even the art of speaking clearly and harmoniously in domestic and business circles is by no means to be despised. Demosthenes's pebbles will not be required if Kofler's rules and advice be taken to heart.

How that insensate folly, miscalled Christian Science, appeals to the German scientist, is clearly set forth in Dr. Moll's *Christian Science, Medicine, and Occultism*, translated by F. J. Rebman. It shows that science is lacking, that Christianity has little or nothing to do with it, and that it is merely a dangerous and seductive form of the constantly recurring epidemics of popular fanatical crazes; taking the form of suggestion widely applied to every disease and injury which are not *prima facie* incurable. A broken leg, a ruptured bowel, are not items beloved of Christian scientists. Attacks of colic, of neuralgia, of acute diseases which run known courses, and all varieties of hysteria and neurosis, form their most lucrative and illustrative chances. If not cured by insisting that they are not really ill, they must be of the class who consider that they are ill when they suffer from illness; if cured, they certainly have never suffered from disease. It is the old story of holy wells, of the various healing *bambini* believed in by the credulous of Italy, of the miracles of Lourdes, of Mecca, of the king's touch. Functional diseases, even if closely imitative of organic lesions, may often respond to functional therapy; if functional disturbances have continued for long and have induced incipient organic changes, as they are prone to, their abrogation through mental influences may well arrest the further progress of the organic lesion, and, by causing the disappearance of the most prominent symptoms, due to functional rather than organic causes, appear to have removed not only the signs, but the actual physical lesions supposed to be at the root of the disorder.

When a Christian scientist has a broken bone to deal with, he takes a back seat. Although he asserts that all disease is imaginary, he finds that broken bones assert the opposite. An ulcerated, and maybe perforated, stomach is only an effect of the imagination; the pain caused by it only a figment of the brain. Resolve that the pain and the cause have no existence, and, lo! they have not. Break a bone, and the resultant pain is only chimerical; but the fracture remains, and refuses to acknowledge that it is psychical, not physical; to yield to words, not deeds; to unite, as a properly constituted Christian scientist's bone should, on being assured that fracture is only a mistake on its part; that, if it considers the matter for a little time, it must admit that, although in two parts, still it is one bone. A Christian scientist loses a limb; but he doesn't. He only imagines it is not there. It may have long been the food of worms, yet 'tis but an idea on his part that it is amissing. He feels pains and tingling in the fingers on the arm of years ago. He only thinks so, just as he merely imagines the fingers are not there.

It is only right to say that the leaders of Christian Science have, we understand, allowed that injuries are injuries, and may be benefited by surgical treatment. By so doing they have left themselves not a leg to stand on, for what constitutes an injury is only a question of degree, the majority of pathological lesions in fact being the result of local injuries.

RECENT ADVANCES IN MEDICAL SCIENCE.

MEDICINE.

UNDER THE CHARGE OF

A. LOCKHART GILLESPIE, M.D., F.R.C.P.Ed.,

MEDICAL REGISTRAR, EDINBURGH ROYAL INFIRMARY.

VASOMOTOR ATAXIA.

VASOMOTOR ATAXIA is the term which was suggested by S. Solis Cohen (*Am. Med.*, Phila., November 8, 1902) as far back as 1892 (*Phila. Polyclin.*, June), and again in 1894 (*Am. Journ. Med. Sc.*, Phila., February), to include the numerous angio-neurotic disorders of the skin and mucous membranes severally identified with such awesome appellations as erythromelalgia, sclerodactylia, angio-neuropathic neurasthenia, acro-asphyxia, etc.

By vasomotor ataxia, or vasomotor-inco-ordination (and the latter more intelligibly, for the word ataxia suggests muscular errancy), Cohen implies the presence of some "fundamental disorder, out of which, through the incidence of varying exciting causes, varying syndrome groups may be developed." This same disorder consists rather in deficient than in perverted normality. Congenital or acquired; from defective development, personal, familial, or racial, if the former; if the latter, from collapse of the nerve functions of latest development, after Hughlings Jackson's law, *i.e.*, of cardio-vascular inhibitory control.

Inhibition governs life, development, progress. "The inhibition of psychic responses unfavourable to mental and moral progress influences the development of individuals and races, . . . of individual desires and tendencies by the forces of organised society makes civilisation possible." So Cohen moralises.

Normally, the cardiac control department suffices to meet the demands made on it by bodily exertion and bacterial invasions. The lower animal frightened flees from danger, the pneumogastric inhibition relaxed, heart beat quickened, eyeballs protruding; the thyroid, maybe, enlarged. The woman who, unlike the scared rabbit, disdains, when alarmed, to run away, exhibits none of these symptoms; inhibitory action here needs strengthening, not relaxation, to meet the strain.

The heart may be highly excited, with facial pallor or flushing, until equilibrium is restored. If not, the syndrome of Graves's disease may be initiated, and may persist. In two cases seen by Cohen, severe frights were immediately followed by tachycardia, goitre, and, later, exophthalmos. In all cases of this character a fundamental element *must* be, an accidental element only *may* be, present. This fundamental disorder varies in degree in different individuals. Considering the delicate nature and complexity of the duties required of the vasomotor mechanism, it is not difficult to understand the importance of its control or the numerous symptoms defect therein may give rise to.

Among the more or less characteristic features of "vasomotor ataxia" Cohen mentions:—

"(1) Dermographism can always be demonstrated, and in marked cases factitious urticaria is produced readily. (2) There is usually a tendency, especially during conversation of an exciting character, to contraction of the upper eyelid, exposing the sclera above the cornea. Sometimes this can be developed by having the subject fix his eyes upon a point at the normal level of the pupil, and telling him to open his eyes as widely as possible. I have looked upon it as a larval condition of the palpebral contraction known as Stelwag's sign of exophthalmic goitre. (3) There is in many cases an exaggerated tendency to blushing. Sometimes what might almost be termed a 'permanent blush' occupies one cheek or a portion of a cheek. Frequently there will be a tendency for one cheek and one ear to become hot and flushed, without special emotional or other excitation, while the other cheek and ear remain normal. (4) Minute cutaneous angiomas are often to be found upon various portions of the body. (5) The nails exhibit the most constant characteristics. Apart from striations, which are not rare, they show certain strata of more or less definite coloration. In the most pronounced cases I have been in the habit of terming them . . . 'patriotic nails'; the markings being red, white, and blue circular segments. At its base, for probably half its length, the nail is more or less cyanotic-blue, purple or faintly violet; beyond this there is a broad whitish area; and then towards the finger-tip the nail becomes pink or red. In the midst of the pink area there appears a semicircular or crescentic line of deep red. . . . Weather changes cause considerable difference in these appearances, cold having a tendency, as a rule, to increase the depth of the cyanotic (venous) hue, while heat tends to increase the proportion of the pink or red (capillary) tint; though this may vary in different individuals. As a rule, if one hand is kept in ice water for several minutes it will become red, while the other becomes more deeply blue. Warm water or hot water will redden the immersed hand without obviously affecting the other. Pressure, or stroking, quickly changes the colour of the part manipulated to white, but the original coloration returns after a brief interval. Elevation of the hand will cause the colour, whether pink, blue, or purple, to disappear as the vessels become emptied, leaving the hand abnormally white. . . . (6) In addition to the effect of weather upon the hands, persons of deficient vasomotor co-ordination usually exhibit marked general sensitiveness to changes of temperature. They may be divided, according to the nature of this temperature reaction, into several groups, of which three may be taken as types. In the first group may be placed those who suffer in summer but are comparatively comfortable in winter. These will complain of the heat of an apartment whose temperature is pleasant to its other inmates. They sweat excessively on slight exertion, and usually exhibit Shakespeare's 'moist palm of youth' even when advanced in years. In such subjects, too, one is likely to find some degree of enlargement of the thyroid gland, and they are always made worse by the administration of thyroid extract. In the second group are those who complain in winter and are usually comfortable in summer. . . . In some, perspiration is deficient even in summer, and these suffer inordinate distress in hot weather as well as in moderately cold weather. Others perspire with undue readiness. The third group includes those who are comfortable only in moderate temperatures, being distressed not only by extremes of summer or winter weather, but even by slight degrees of either heat or cold. . . . (7) In certain patients, especially those with more or less constant red flushing of the face, if a silver probe is drawn across the flushed cheek, a bluish black mark will be left, which can afterwards be wiped off. . . . (8) Refractive errors are almost invariably present; in the great preponderance of cases there is hyperopic astigmatism. (9) The majority of those who manifest these stigmata are highly emotional, and would unhesitatingly be classed as 'nervous,' 'neurotic'—sometimes even as 'hysteric'—individuals; yet some are persons of great intelligence and stability of character, . . . among them artists, actors, authors, bankers, jurists, and physicians of the first rank. . . ."

EMPYEMA AND BACTERIOLOGY.

WITHINGTON (*Boston Med. and S. Journ.*, November 6, 1902) correlates a clinical study of 135 cases of empyema with the bacteriological findings in the exudates. The cultures were made in each case from a drop of pus withdrawn from the pleural cavity by means of a hypodermic needle, with strict antiseptic precautions. The chief organisms identified were—

	Alone.	With other Forms.	Total.
Diplococcus lanceolatus (Fränkel)	28	32	60
Streptococcus pyogenes	35	39	74
Staphylococcus aureus	6	7	13
Bacillus pyocyaneus	2	2	4
Bacillus Friedländer	2	1	3
Bacillus typhosus	1	...	1
Sterile	9	...	9

In eighty of the cases certainly, and in thirteen most probably, lobar pneumonia preceded the empyema. Tuberculosis was present in twenty of the cases, in some of whom acute pneumonia supervened. One hundred and fifteen were, twenty were not, operated upon—thirty of the former, and ten of the latter, dying: forty in all, or 29 per cent. Five of the cases, however, were dismissed in so grave a state that recovery was unlikely, and they really ought to be included in the mortality figures—giving forty-five deaths in 135 cases, or 33 per cent.

The mortality discussed in relation to the organisms present works out as follows:—

No.	Pure Cultures of	Cases.	Deaths.	Mortality per Cent.
1	*D. lanceolatus*	28	8	28
2	*Streptococcus pyogenes*	35	9	26
3	*Staphylococcus aureus*	6	4	86
	Mixed Cultures.			
4	(1) + (2)	18	2	11
5	(2) + (3)	2	2	100
6	Sterile . . .	9	2	22

This result fails to bear out Netter's statement that the cases due to *D. lanceolatus* are relatively mild compared with those from streptococci. Fuller details follow regarding the fatal cases severally considered, for which the paper itself must be consulted. Withington says in effect that—

Empyema, capable of being caused by manifold infections within and without the chest, is in most of cases the result of pneumonia. The character of the pneumonia cannot be judged by the organism present in the empyema. Even in lobar pneumonia, other organisms, notably the streptococcus, may be present in the lung along with the one which we consider to be the cause, namely the lanceolatus of Fränkel, so there is an opportunity for that contaminating organism to reach the pleura. The lanceolatus, if present, may probably be taken to indicate a previous pneumonia, the streptococcus a lobar, lobular, or grippal pneumonia, or a phthisis with mixed infection. As tuberculosis acquires greater malignancy after acquiring a mixed infection, so these lobar pneumonias, in which a streptococcic contamination is most marked, may be the most liable to produce empyema, and the organism in the purulent exudate as likely to be the contaminating agent as the original infection.

When the streptococcal infection is derived from septic foci without the chest, it is generally of more virulent type.

SURGERY.

UNDER THE CHARGE OF

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Structural Peculiarities of the Prostate and Bladder of Old Men.

The following are the main conclusions arrived at by Jastreboff with regard to the microscopic characters of the prostate and bladder of old men who suffer from dysuria:—(1) The microscopic structure of the prostate in old men presents so many variations that it is impossible to select any one form which may be said to be typical. Speaking generally, the most marked change is an excessive development of connective tissue at the expense of the glandular elements of the organ. (2) In all the cases examined there was a marked diminution in the amount of elastic tissue, and the elastic fibres which remained were often degenerated. This may be explained by repeated subacute congestive conditions of the prostate. (3) The disappearance of the elastic fibres of the connective tissue of the prostate, together with the dilatation of the veins of the parenchyma, favour congestion of the gland. This congestion increases the volume of the prostate, and so augments the obstacle which interferes with micturition. (4) The primary weakness of the bladder in old men is due to a quantitative diminution of the anatomical elements of the organ, it may be atrophy and disappearance of the muscular elements, or degeneration of the elastic fibres of the connective tissue, and at the same time dilatation of the veins situated in the walls of the bladder. These factors tend to cause congestion of the bladder, and so diminish its functional power. (5) The muscular atrophy and the disappearance of the elastic fibres occur together, and are apparently the result of old age. (6) As age advances, these structural changes become more marked, and the functional disability is increased by chronic affections of the bladder, and by passive dilatation due to repeated attacks of retention of urine, or to incomplete emptying of the viscus. (7) These repeated attacks of retention have a very detrimental effect on the functions of the bladder, particularly in aged subjects in whom the regenerative power of the tissues is greatly diminished. (This paper is translated from the Russian by Dr. Rizat.)—*Ann. d. mal. d. org. genito-urin.*, Paris, October 1902.

A Review of Seven Hundred and Twenty Laparotomies for Gall-Stones.

In an interesting address to a Medical Congress at Carlsbad, Kehr reviews his experiences in gall-stone surgery. In the course of twelve years he has done more than seven hundred laparotomies for the removal of gall-stones, or the relief of conditions due to their presence. A notable statement in his remarks is, that he has almost invariably found inflammation in the gall-bladder or bile passages, in cases of colic or in cases just recovering from an attack of colic. Stones in the gall-bladder, he believes, do not make their presence known till infection occurs; then inflammatory exudate stretches the gall-bladder and pushes the stone or stones into the ducts.

He comments on the absence of jaundice in many cases, having found it absent in a third of the cases of stone in the common or hepatic ducts; it being no unusual experience to find the common duct full of stones, without a trace of jaundice. Inflammation he regards as, in many cases, the cause of jaundice.

With regard to so-called natural cures, brought about by the formation of fistulous communications between the gall-bladder and neighbouring hollow viscera, Kehr remarks that his respect for nature has not been increased by his study of these cases, as such openings seldom lead to complete elimination of the stones, and often permit of infection of the bile passages.

The question of the indications for operative interference is fully discussed. In cases of repeated mild attacks of colic, with complete freedom from symptoms between the attacks, Kehr advises against operation. Acute obstruction of the common duct should, with few exceptions, be treated by medical means; but if symptoms of cholangitis appear, with protracted jaundice and loss of strength, operation must be considered. Cases with jaundice and discharge of stones with each attack belong to the physician; if the attacks become frequent, and lessen the patient's strength, and if there is no apparent hope of complete evacuation of the stones, operation is advisable. Patients with chronic jaundice, not dependent on a stone in the common duct or incurable disease of the liver, should be operated on at latest three months after the onset of the jaundice, as not infrequently a curable interstitial pancreatitis is found instead of the expected cancer of the head of the pancreas. In cases without any local objective abnormal condition in the liver or gall-bladder, but with persistent severe pain, not yielding to medical treatment, operation should be performed. In such cases adhesions due to trauma, and not to gall-stones, are found to be the cause of trouble.

In discussing medical treatment, the author lays stress on his view, that its object is mainly to allay inflammation, and should not be to attempt to move on the stones from the gall-bladder, where they are much more easily reached and dealt with than when they lodge in the ducts.

An interesting analysis of the operations made use of is given. Of the first 360 cases, 54 per cent. were cystostomies; 20 per cent., cystectomies; and 1 per cent., hepatic duct drainage. Of the second 360 cases, only 20 per cent. were cystostomies, while 54 per cent. were cystectomies, and 41 per cent. were accompanied by drainage of the hepatic duct. For all acute processes in the gall bladder, cystostomy is the operation of choice, while, during a free interval between attacks, the removal of the organ at fault is the best procedure. In considering the operation of chole-cystenterostomy Kehr states that uniting the gall-bladder to the stomach is preferable to uniting it to the colon, as the latter may cause an ascending infection of the bile ducts, which the former presumably does not. The flow of bile into the stomach is not attended with any serious drawbacks. The mortality attending cystectomy is only 1 per cent. higher than that of cystostomy. The removal of the gall-bladder has no effect on digestion, and recurrence of stones after it has never been seen by the author. As a rule, the organ is so altered by inflammatory processes or scar formation that it can no longer functionate properly, and it is therefore better away. The mortality where drainage of the hepatic duct is employed, is smaller than that following choledochotomy with suture, because the operation is shorter, and any infection in the hepatic duct is got rid of sooner. Secondly, stones are overlooked less often in the former operation; and if stones in the hepatic duct are overlooked, they are often removed by subsequent washing out of the duct. The drainage is effected by passing a tube the size of the little finger into the common duct, and about 4 cms. up the duct. This tube is allowed to remain for fourteen days, draining all the bile, and stones may be washed through it. Choledochotomy, with suture, Kehr regards as an operation which will soon be abandoned.—*Munchen. med. Wchnschr.*, xli., xlii., xliii., 1902.

OPERATIVE TREATMENT OF CIRRHOSIS OF THE LIVER.

LANZ relates two cases in which he has operated for the relief of ascites, due to cirrhosis of the liver. The first case was that of a woman, æt. 54, who had suffered from symptoms of cirrhosis for more than a year before she came under observation. She was much emaciated and very weak. After the abdomen had been tapped several times, each tapping being followed by a speedy reaccumulation of fluid, it was decided to perform "epiploplexy," in the hope of relieving the patient. The abdomen was opened in the middle line, and 15 litres of clear yellowish fluid escaped. The liver was seen and felt to be cirrhotic. A tumour of the right ovary was incidentally discovered and removed, and then the great omentum was stitched to the parietal peritoneum by a continuous suture, after the parietal layer had been well rubbed with a dry swab. The abdomen was closed, and a compression dressing applied with collodion. The patient made a good recovery, and the stitches were removed nine days after operation. Five days later the patient was discharged from hospital without any trace of reaccumulation of fluid in the abdomen. Her general condition was also much improved. Three months later she reported herself, and it was found that her appetite was good; she felt quite well, and there was no trace of fluid in the abdomen.

The second patient had a history of four years' duration of illness. When admitted to hospital she had a markedly cyanotic appearance, was very short of breath, and her abdomen was enormously distended with fluid. Operation was performed without preliminary tappings, and, owing to heart and lung complications, local anæsthesia only was employed. The same procedure was adopted as in the first case, the omentum being fixed to the parietal peritoneum over as wide an area as possible. Ten days after operation, examination revealed the presence of a moderate quantity of exudation. The patient was discharged a few days later, much relieved.

The result of the first case was exceptionally fortunate, while, at the time of reporting, that of the second was still doubtful.

Having regard to the hopeless prognosis in cirrhosis of the liver, Lanz regards the attempt to relieve the congested portal circulation by establishing a collateral circulation, as a justifiable one, and regrets that epiplopexy is at the present time looked on as a last resort, and that the patients are only operated on when the circulation is already too much disturbed for the operation to succeed.—*Cor.-Bl. f. schweiz. Aerzte*, Basel, September 15, 1902).

Landerer, in a short paper, also discusses the operative treatment of hepatogenous ascites. As regards the technique of the operation, he advises that the surface of the organs be thoroughly rubbed with gauze, and that the surface of the liver be, in addition, lightly scratched with a curette, to ensure a closer union with the parietal peritoneum over it, which should be treated in the same way. The great omentum should then be stitched to the parietal layer over as large an area as possible. After rubbing the surface of the spleen, the abdomen is closed. Landerer considers that the method of implanting the omentum in the muscular wall, through the parietal layer, has no advantages, and needlessly complicates an otherwise simple operation. He has operated for this condition three times. Once on a sailor suffering from repeated hæmatemesis and melæna, due to cirrhosis, but with no ascites; once on a patient with marked venous congestion in the abdomen; and once on a patient with great ascites. All the patients died, but Landerer points out that that shows that they were all operated on too late, as they were all very much reduced in strength before the operation was performed. In no case was there any trace of peritonitis post-mortem. He has collected thirty-four cases of this operation. Seventeen of the patients were cured—that is, the ascites did not return—and they felt decidedly better than before the operation. Two were improved, five unimproved, and eleven died. According to Landerer, experiments have shown that sudden ligature of the portal vein causes death. If the omentum is fixed to the parietes beforehand, however, ligature of the portal vein below the junction of the splenic vein is not followed by death. Ligature of the vein above the splenic junction is not recovered from, after epiplopexy. On the whole, Landerer regards the operation as a feasible and legitimate one, but it must not be put off too long. Patients in whom there is excessive cardiac, vascular, and hepatic degeneration are not suitable for operation.—*Med. Cor.-Bl. d. württemb. ärztl. Ver.*, Stuttgart, June 28, 1902.

OBSTETRICS AND GYNÆCOLOGY.

UNDER THE CHARGE OF

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A Case of Spontaneous Complete Rupture of the Uterus.

Kleinertz (*Centralbl. f. Gynäk.*, Leipzig, 1902, No. 40) reports the following case occurring immediately after rupture of the membranes, and three and a half hours after the onset of pains. P., æt. 39, complained of sudden abdominal pain; had eight normal confinements, two abortions. The sudden pain was replaced by slight recurrent abdominal pains. She was an under-developed and emaciated woman. On vaginal examination there was no bleeding. The cervix was 2 cms. long; admitted two fingers. Above the internal os and on the anterior uterine wall there was discovered a rupture through which the fœtal head could be felt. The pelvis was normal. She was removed to hospital fifteen hours after the supposed occurrence of the rupture; laparotomy was performed, and revealed a double rupture extending upwards on both sides of the anterior uterine wall. The dead fœtus was free in the abdominal cavity, placenta on the anterior uterine wall. The left uterine artery was free and intact, and there was very little blood in the peritoneal cavity. The uterus was removed by supravaginal hysterectomy, with intra-peritoneal treatment of the pedicle. The cause of the uterine rupture was in this case obscure. The patient was asleep, wakened with labour pains, and ten minutes later the severe abdominal pain came on, associated probably with the uterine rupture. The pelvis was normal—child of average size—and the patient had never before required any intra-uterine treatment. Microscopic examination of the uterine tissue revealed nothing abnormal beyond separation of groups of muscular fibres by homogeneous masses of delicate connective tissue. Kleinertz points out the possibility of weakness of the uterine wall as a consequence of eleven previous pregnancies and the poorly nourished and overworked condition of the patient.

Vaginal Extirpation of a Cancerous Uterus at the Sixth Month of Pregnancy.

Schroeder (*Centralbl. f. Gynäk*, 1902, Leipzig, No. 40) states that, so far, only about twelve similar cases have been reported. P., æt. 30, three normal confinements, two abortions, the last eighteen months previous to present pregnancy. Menstruation regular till November 1901. Since that date patient noticed slight persistent hæmorrhage. Examined in May 1902, when there was found a cancerous ulcer on the anterior lip.

This was first removed by Paquelin's cautery, the uterus being extirpated by Schuchard's method of vaginal hysterectomy. The uterus was first split in the middle line, the membranes ruptured, and the child (dead) extracted by turning. The placenta was not removed from the uterus, and the broad ligaments were secured with ligatures. Schroeder points out that the child should be removed from the uterus previous to any ligatures being applied to the parametrium, as early ligature of the uterine arteries is unfavourable to the life of the fœtus. He believes that vaginal extirpation according to Schuchard's method will take the place of abdominal hysterectomy as giving a smaller immediate mortality, and probably as good permanent results.

THE TREATMENT OF PUERPERAL INFECTION BY HYSTERECTOMY.

THIS formed one of the subjects of discussion at the Gynæcological Congress at Rome. Fehling collected sixty cases of puerperal sepsis treated by operation, with a general mortality of 55·7 per cent., as follows :—

19 abdominal extirpations : mortality . .	31·5 per cent.
33 vaginal ,, ,, . .	69·6 ,,
4 supra-vaginal hysterectomies . . .	50 ,,
4 total hysterectomies after abortion . .	75 ,,

He points out the difficulty of deciding upon the indications for operation, as many cases recover under the ordinary methods of treatment, and few of the worst cases would be suitable for operation. Fehling considers the indications very limited, and would confine hysterectomy to cases where the focus of infection is limited to the uterus. As examples he mentions putrefaction of a retained placenta or gangrenous myomata. In certain cases of metrophlebitis, hysterectomy might be of service, combined with extirpation of the thrombosed veins in the broad ligament, and ligature of the ovarian vessels. Leopold believes that hysterectomy is justifiable only in cases where it is certain that the uterus alone is the source and site of infection, and where other methods of treatment have failed, *e.g.* retained putrid placenta which cannot otherwise be removed. Treub collected 724 cases of puerperal fever, thirty-four of which died; in six the source of infection was confined to the uterus, and only in two cases could total extirpation be expected to be of any use. From the literature he found thirty-six cases of total extirpation, thirteen of which were successful. But again the question arises: Could not many of these cases have been successfully treated by more conservative means, and the uterus at the child-bearing period thereby retained? Tuffier was the first to report a successful case in France. He thinks, from a pathological point of view, cases do occur where this treatment is demanded. The question he considers most difficult to decide is the proper time for operation. "To operate too soon is a crime; too late, useless." With regard to choice of operation, he prefers abdominal section in acute cases, the vaginal route in more sub-acute cases. Freund gives the indications for operation as follows :—(1) In cases of total or partial placental retention, other means failing; (2) in cases of criminal abortion, with septic symptoms. He endeavours to remove as much as possible of the broad ligament. Sinclair, not having obtained encouraging results with the serum treatment, tried operation, but with unsatisfactory results. Pichevin regards hysterectomy as indicated only in rare cases of gangrene or abscess of the uterus. Faure is an advocate of vaginal rather than abdominal operation in cases where the uterus is infiltrated with streptococci. He reports thirteen cases. Hofbauer has had eleven recoveries out of twelve cases from the administration of Nucleinen. Zweifel points out how few cases of puerperal peritonitis recover from abdominal section, and those that do are probably gonorrhœal and not septic in origin. In cases of circumscribed foci of pus, he favours section with ligature of the ovarian and hypogastric veins, along with extirpation of thrombosed veins. Morisani points out the difficulty in choosing cases in time for operation. Of four cases operated on by him, two recovered. He favours the abdominal route.

The general opinion was unfavourable towards hysterectomy as a means of treatment of puerperal infection. The only cases where there appeared to be any unanimity were those where the infection was confined to the uterus, as exemplified by cases above referred to.—*Centralbl. f. Gynäk.*, Leipzig, 1902, No. 44.

THERAPEUTICS.

UNDER THE CHARGE OF

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ANTISTREPTOCOCCIC SERUM FOR SCARLET FEVER.

Moser points out that in many cases of scarlatina a streptococcic infection can be made out. Out of ninety-nine cases of fatal scarlatina, he has been able to cultivate streptococci from the blood in the heart in sixty-three cases. These results accord with those of previous investigations, and make it probable that streptococci play an important part in the disease. On the other hand, the use of ordinary antistreptococcic serum has not proved of use in treating the disease. Moser points out that this may be due to the fact that there are different varieties of streptococci. The organism isolated from scarlatina differs from other varieties found in other diseases in being almost innocuous for rabbits, and in possessing different agglutinating properties. Moser therefore prepared a special immune serum for streptococci obtained from scarlet fever cases. As there is no proof yet that the organism is the same in all cases, he produced a polyvalent serum by injecting horses with increasing doses of a mixture of living cultures obtained from different cases of scarlet fever. The organisms were grown on bouillon, and were not passed through animals. After months of such treatment, the serum was drawn off and preserved in a sterile condition, without any addition of a preservative. The serum was tried in eighty-four cases. At first the dose was too low. Later, better results were obtained using doses of 180 c.c. Possibly the serum was more potent in the later cases. The individual doses varied from 30 to 180 c.c.; the latter amount is now chiefly used. In seventeen cases classed as mild or moderately severe there was no mortality. In sixty-two cases classed as severe and apparently hopeless there were sixteen deaths. The earlier the injection the more favourable is the result. The chief clinical result is the rapid improvement in the general condition. With early injection the rash may not fully develop, or may fade much sooner than usual. The disturbance of the central nervous system vanishes in a short time, while the temperature and pulse often show a critical fall. The symptoms of heart weakness are favourably influenced. The throat clears up quicker, and, though superficial necrosis is not prevented, Moser has never observed deep destruction. As yet, nothing can be said about the effect of the serum on the renal and middle-ear complications. The whole course of the disease is shortened, and convalescence occurs much sooner. Injection of normal horse serum and of Marmorek's polyvalent streptococcic serum had no effect on the course of the disease. Serum rashes were often noted, but joint pains and abscess formation were rarer.—Moser, *Wien. klin. Wchnschr.*, 1902, No. 41.

TREATMENT OF TYPHOID FEVER.

ROLLESTON refers first to diet, as it is the most essential part of the treatment. In all cases it should be ordered by the doctor, and not left in the hands of the nurses. The usual plan of giving food every two hours is unnecessary. The amount is often too much. The intestinal tract is in a bad state for digesting food, and in the early stages excessive liquid food may cause vomiting and give rise to fermentation and putrefaction. During the typhoid state, feeding may increase abdominal distension, toxæmia, and diarrhœa. The plan of giving nothing but water for the first three or four days was used with some success in South Africa. This starving of the fever gives the inflamed mucous membrane rest. Rolleston has adopted this plan to a certain extent. He gives food only three or four times in the twenty-four hours in severe cases, and finds that this diminishes abdominal distension and diarrhœa. Feeding only every four hours is a better basis than two-hourly meals. The patient's appetite should direct the feeding. During the febrile stages the milk should be peptonised and diluted. The stools should be carefully watched for milk curds. Sometimes whey and albumin-water agree better with the patient. Beef-tea and chicken-broth are unnecessary except as a change. Cold water or soda-water may be freely given. As soon as the temperature becomes normal the diet should be improved, and in a week solid food may be given. Relapses, though often synchronous with improvement in the diet, are very rarely due to it. As intestinal antiseptic, Rolleston prefers liq. hydrarg. perchlor. to salol. For cardiac failure he has ceased to depend on alcohol, as it may of itself damage the myocardium. He minimises the amount of alcohol, and uses instead hypodermic injections of strychnine. This should be given early, as soon as cardiac dilatation is detected. Digitalis and strophanthus given by the mouth are inferior to strychnine hypodermically. As regards antityphoid inoculation, it is generally recognised that the protection afforded was decidedly disappointing.—*Treatment*, London, October 1902.

TREATMENT OF ENEURESIS.

WALDO holds that in most cases eneuresis in children is a neurosis depending on nervous inhibition of a normally developed organ, and that it is not due to muscular weakness or developmental failure. Only in a few cases is eneuresis symptomatic of central disease. In treating the idiopathic cases, we find that the most diverse methods give almost equally good results, which makes it highly probable that we have to do with a functional disease. Medical treatment with drugs and hydropathy is falling more into the background. Waldo finds the best treatment is massage. The combined rectal massage of Thure-Brandt gives excellent results in functional eneuresis, and, on the average, three to five applications lead to permanent cure. In some cases of symptomatic eneuresis good results were also obtained. In carrying out the method the patient is put in the dorsal or knee-elbow position, and the one hand, placed just over the symphysis, is pressed against the finger of the other hand introduced into the rectum. Thus for four or five minutes the neck of the bladder is subjected to gentle circular or transverse massage movements. This simple method should always be tried, even in the incontinence of spinal disease. It seems probable that in many cases the massage acts through the influence of suggestion, and this would explain why eneuresis of ten or twelve years' standing can be cured after one or two applications of massage. It is also noted that, when improvement commences, the patients at first can only retain the urine during the day, while they may still be incontinent during the night. —*Ztschr. f. diätet. u. physik. Therap.*, Leipzig, September 1902.

PATHOLOGY AND BACTERIOLOGY.

UNDER THE CHARGE OF

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PARATYPHOID FEVER.

THIS is fast becoming recognised as an entity apart from typhoid fever. Numerous references to it have of late appeared in Europe, America, and this country. A short article was devoted to it in the September number of this Journal, in noticing a paper by Hume in the Thompson Yates *Laboratory Reports*, under the heading of a "New Pathogenic Bacillus causing a Disease like Typhoid Fever." He called the bacillus

Bacillus L., belonging to the *enteritidis* group, and gave an analysis of fourteen cases, besides his own, due to the same organism. It is variously called the *B. paratyphosus* or *B. paracoli*, but the former name is gradually becoming adopted, and the disease which it produces is therefore called paratyphoid fever. Since this article was written, other papers on the subject have appeared—notably those by de Feyfer and Kayser (*München. med. Wchnschr.*, October 14 and 21, 1902), Johnston (*Am. Journ. Med. Sc.*, Phila., August 1902), Howlett (*ibid.*), and by Longcope (*ibid.*), the latter under the title of "Paracolon Infection." It now appears that the total of fifteen observed cases as given in September is far below the mark, and that it is probably over forty. It is difficult to estimate how often it occurs, and how often it has been mistaken for true typhoid fever. We have been for some time puzzled by cases which clinically resemble typhoid fever not giving the Widal reaction. It would, of course, be unwise to conclude that all such were cases of paratyphoid fever, but it is probable that some are. Schottmüller found seven cases of paratyphoid in a series of 118 cases, all supposed at first to be true typhoid fever; and Kurth found five in sixty-two, which gives a percentage of about 6½. If this be anything like the truth, the recognition of paratyphoid fever becomes an important practical subject. How is this to be done? The clinical characters cannot be trusted. They are too like those of classical typhoid fever, and may be summed up thus—(1) Fever. There is generally a slight rise for three or four days, followed by a higher rise, the temperature curve afterwards much resembling that of typhoid fever. It is more often mild or moderate than severe. (2) The pulse is slow and regular, but becomes more rapid as the fever rises. It is often dicrotic. (3) Rose spots are present in about half the cases, varying from a few to a plentiful scarlatiniform rash. (4) The spleen generally shows some enlargement, being palpable in over half the cases. (5) The gastro-intestinal symptoms are, coated tongue, general malaise, and headache, pain in abdomen, gurgling in ileo-cæcal region, and marked diarrhœa, very rarely with hæmorrhage. It is interesting to note that, so far as can be judged at present, there is no intestinal ulceration or swelling of the lymph glands. (6) The urine gives the diazo reaction, and shows the presence of indican. (7) There is no leucocytosis. Bacteriological examination, on the other hand, gives more reliable evidence. A bacillus has been isolated from some of the cases whose reactions show it to be allied to, and probably intermediate between, the *B. typhosus* and the *B. coli*. Its microscopic and structural characters were given in the former abstract (September), and it will be necessary here only to dwell upon those results which are of value in diagnosis. Some authorities hold that there is more than one bacillus concerned in the causation of these cases, and distinguish a *B. paratyphoid*, type A, and a *B. paratyphoid*, type B, which, although resembling one another closely in their characters, action, and results, are yet different. This is particularly seen when the Widal reaction is tried. The blood serum of a paratyphoid patient gives a negative result with the *B. typhosus*, unless very powerful, and a positive result with either *B. paratyphosus*, type A or B, but not with both. The proper degree of dilution is not known, but agglutination occurred with *B. paratyphosus*, type B, in highest dilutions varying from 1 in 120 to 1 in 5700. For clinical diagnosis, the macroscopic reaction seems to have been trusted by Bruns and Kayser, a quickly positive result being obtained with a dilution of one part of serum to seventy-five parts of a 12-hour bouillon culture of one or other type. Powerful agglutinating sera give a positive result also with *B. typhosus* in dilutions under 1 : 20. It would therefore seem that the practice of most bacteriologists, in using a dilution of 1 in 50 for the microscopic test of the Widal reaction, is the right thing also for the paratyphoid bacilli, as even the most powerfully agglutinating sera of paratyphoid patients, when so diluted, give a negative Widal reaction with the *B. typhosus*, but a positive one with their own type of *B. paratyphosus.* When any serum so diluted gives a positive reaction with one of these types and also with the *B. typhosus*, as has happened, there is every reason to conclude that a mixed infection is present. This is held to be by far the most important bacteriological reaction of paratyphoid fever, as by its means a safe diagnosis can be at once made. The other reactions of importance are finding the bacilli in the blood, the rose spots, the urine, and the stools; and this has been done, but not with such frequency as to justify safe conclusions. From the blood the bacillus has only been isolated in about two of the cases, and in these a large quantity of blood had to be withdrawn, namely, 12 c.c., which were distributed among five Erlenmeyer's flasks, each containing 150 c.c. of broth, only one of which subsequently showed any growth. The bacilli would thus appear to be present in the blood in much smaller numbers even than in true typhoid fever. In Longcope's fatal case the bacillus was isolated from the blood during life, and from the blood, lung, liver, and spleen after death. A fatal result is rare, for, though the disease may be severe, it is usually mild.

A New Diphtheria Serum.

It is well known that the present and valuable diphtheria antitoxine has no bactericidal action on the diphtheria bacilli, at least outside the body. They can even be made to grow in it. Search has long been made for a serum antagonistic alike to the organism and its toxine, but so far unsuccessfully. In certain other diseases, such as typhoid, cholera, and plague, a serum has been obtained which is antagonistic to the organism of these diseases. Such a serum is distinguished by the name antimicrobic. In the case of the well-known antitoxic serum of diphtheria, its inoculation into the human body will protect that individual against subsequent infection with diphtheria, or assist in curing him if he be already infected, and its action is very simple: it merely enters into chemical union with any free toxine finding its way into the blood. The result of this union is a harmless compound. Now, if an antimicrobic serum be inoculated into an animal infected by its specific bacilli, it gradually brings about the destruction of the bacilli, but in a somewhat complex way. So far as this is at present known, there appears to be more than one reaction dependent upon different properties in the serum, and these may be differently possessed by different sera. The phenomenon of agglutination exemplified in the Widal reaction depends upon one of these. A serum having this reaction possesses a substance called agglutinin, which causes the bacilli to adhere together in clumps. These are, in most cases, then precipitated, though some authorities hold that this latter action is due to a separate substance called precipitin. These phenomena are related to antimicrobism, but they do not of themselves result in the actual destruction of the bacilli. This is accomplished, however, by another property in the serum which dissolves the bodies of the bacilli, known as a lysogenic action. This lysogenesis is a most important phenomenon, and it is exhibited by sera towards a great variety of cells other than bacteria. It has come to be spoken of as cytolysis, and the substances capable of causing it as cytolysins. Wassermann (*Deutsche med. Wchnschr.*, Leipzig, Oct. 30, 1902) claims to have discovered an antidiphtheritic serum, which antagonises alike the diphtheria bacillus and its toxine; which, in other words, is both antimicrobic and antitoxic. It is true that the present antidiphtheritic serum, though it is only antitoxic, and not antimicrobic, is a powerful protective and curative agent, and it is not easy to understand how it can be so when it has no action upon the bacteria themselves. When it is remembered, however, that its action within the animal tissues may be somewhat different from what it is *in vitro*, this result becomes more easily understood. The antitoxic serum counteracts all the diphtheria poison as quickly as it is formed, hence tissue destruction ceases, and the natural bactericidal powers of the invaded tissues are exerted to their fullest extent, gradually bringing about the destruction of the now harmless bacilli. This is doubtless the explanation of the method of cure in the great number of successful diphtheria cases, in which the patient not only completely recovers himself, but ceases also to be a source of infection to others. It does not, however, account for those cases, in a certain proportion of which, though recovery is apparently complete, the bacilli, in a virulent state, are found either in the throat or nose or air-passages. The individual who harbours these bacilli is himself immune to their action, but he remains a source of danger to others. The bactericidal powers of his tissues are apparently insufficient to bring about the destruction of these bacilli; hence it would certainly be an advance if we possessed a serum capable, when injected, of destroying them. Wassermann's method of obtaining this serum is ingenious. He injected dead diphtheria bacilli into rabbits, etc. If living bacilli, even in small numbers, are injected, the animals mostly die. The bacilli are heated to 60° C. for twenty-four hours, and further dried in an exsiccator, and pulverised in a mortar. The powder is extracted with 1 per cent. ethylendiamin solution. To 1 grm. of diphtheria bacillus powder 20 c.c. of ethylendiamin solution is added. It is shaken several times in a special apparatus, and, after standing for twenty-four hours, it is filtered and centrifuged. This gives a clear fluid of a yellow colour, containing substances (intracellular) obtained from the bodies of the bacilli. Acetic acid gives with it a copious precipitate. Death from diphtheritic poisoning followed its injection (1–2 c.c.) into rabbits. This showed that the solution contained free diphtheria toxine, derived from the bodies of the bacilli and extracted by the ethylendiamin. A quantity of diphtheria antitoxine, sufficient to neutralise this free toxine, was next added to the solution, and 2–4 c.c. of this neutralised fluid injected repeatedly into rabbits. A reduction of body weight followed, showing that it was capable of causing disturbance of metabolism. The serum withdrawn from the animals thus treated, when added to the clear extract obtained from the bacilli as above mentioned, caused a cloudiness, which sank to the bottom as a flocculent precipitate. This does not occur with the serum of control animals not so injected. He thinks that his serum, in addition to being of therapeutic value, may serve as an important means of distinguishing between the true and false diphtheria bacillus.

IMMUNISATION IN COLD-BLOODED ANIMALS.

NOGUCHI contributes two papers in the *Univ. Penn. Med. Bull.*, November 1902, upon "The Interaction of the Blood of Cold-blooded Animals with reference to Hæmolysis, Agglutination, and Precipitation," and upon "A Study of Immunisation Hæmolysins, Agglutinins, Precipitins, and Coagulins in Cold-blooded Animals," which are interesting as bearing upon the important subject of immunity. He finds that the sera of many cold-blooded animals contain both agglutinins and hæmolysins, and that the sera of some contain precipitins. A multiplicity of such bodies probably exists in the sera. Artificial hæmolysins, agglutinins, anti-agglutinins, serum precipitins, aqueous-humour precipitins, and milk coagulins can be produced through immunisation in certain cold-blooded animals. The hæmolysins and agglutinins for red blood cells can be produced in animals which do not possess such cells. Iso-agglutinins and iso-hæmolysins can be produced in certain species of turtles. The iso-bodies thus produced have a slight erythrolytic action upon the blood of other, though related, species of turtle. The complements of turtles' blood are rendered inactive by a temperature of 50° C. maintained for thirty minutes. The precipitins and coagulins for aqueous humour and milk respectively can be produced in animals which do not possess the corresponding fluid, in the strict sense. These facts show the widespread distribution of common receptors through the animal kingdom, and extend the chief tenets of Ehrlich's hypothesis to invertebrates and vertebrates among the cold-blooded animals.

DERMATOLOGY.

UNDER THE CHARGE OF

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MULTIPLE BENIGN EPITHELIOMATA OF THE SCALP.

VARIOUS authors have from time to time described individual cases, where numerous solid innocent tumours formed on the scalp, and occasionally to a less extent on the body also. Dubreuilh and Auché (*Ann. de dermat. et de syph.*, Paris, June 1902) have collected a series of these, totalling to at least thirteen, including one of their own which they had carefully investigated. In almost all instances the tumours started on the scalp, and there they remained largest and most numerous, though they have been found later on the face, neck, trunk, and scrotum. The smallest, of a rose-coloured hue, are nearly invisible and are implanted deeply in the skin. The larger vary from a nut to a mandarin orange, are sometimes lobulated, and in colour roughly resemble tomatoes. The skin over them is thin, tense, traversed by dilated venules, and generally hairless. Though incorporated with the skin, they are freely movable on the cranium. Their consistence is commonly firm, like a moderately hard fibroma. Their characters are well shown in some figures in Hutchinson's "Smaller Clinical Atlas" (xc., cxix., cxx., and perhaps xxix.). If the tumours are closely set, the surfaces in apposition are liable to become macerated and to exude a fœtid secretion. Yet there is little tendency to ulceration, and accidental abrasions heal readily. On the trunk the appearances are similar, but the tumours are smaller and more scattered. They continue indefinitely, increasing steadily in number but causing no alteration in health. Dubreuilh's case had existed for three years; but one, that of Poncet-Bérard, dated back thirty-six. If excised, they do not return; even erasion has caused their permanent disappearance. They are most frequent in women, and a hereditary strain can be sometimes traced. Now and again some wound or prolonged illness has preceded their first manifestation. The histology is described minutely and at great length, a series of well-executed woodcuts enabling the reader to follow more easily. The tumours have no enveloping membrane, but are set down in the substance of the connective tissue of the corium and of the superficial portion of the hypoderm. Their structure is essentially alveolar, the alveoli being severally bounded by a thick border composed of a homogeneous hyaline material, coloured bright red by hæmatin-eosin, and red by van Gieson's strain. In the smallest and commencing tumours many of the alveoli have not this hyaline ring, but their wall is formed of connective tissue fibres pressed one against another. The contents of the alveoli are not always alike. The most external cells are small, often irregularly cubical or triangular, with little but clear protoplasm and a relatively voluminous nucleus rich in chromatin. The inner cells are more irregular and polygonal, from reciprocal pressure, but the nucleus stains well except in the very centre. This description does not apply to all the cells, which indeed vary more or less markedly from the type, since they may be round, elongated, or irregular. Apart from the peripheral hyaline border, some alveoli are very like those in rodent ulcer. Besides the neoplastic cells, many alveoli contain more or less of a hyaline substance, corresponding to that of the border. The hyaline blocks may be contained within a layer of cubical or palisade cells. The walls of the blood vessels which penetrate the larger alveoli are always hyaline. These may be very thin, hence hæmorrhages are frequent. The lymphatic spaces may be dilated, and their endothelium swollen and hyperplastic. The tumours take origin from the epidermis, but the neoplastic cells soon deviate considerably from the epidermic type, while the connective tissue undergoes a hyaline degeneration. The multiplicity of the tumours Dubreuilh regards as not due to infection conveyed from previously existing ones, but to individual local independent genesis in the epidermis. This view is supported by the absence of any ganglionic complications.

ERUPTIONS OCCURRING IN THE MANUFACTURE OF CHLORIDES BY ELECTROLYSIS.

IT would almost seem that new chemical processes, if they facilitate production, may at the same time evoke fresh dangers. Within the last two years or so, a method of making chloride of lime and soda by the electrolysis of chloride of sodium and potassium has been introduced, and from its economical advantages over older procedures is likely to attain considerable if not large proportions. Fumouze (*Gaz. hebd. de méd.*, Paris, October 5, 1902) has seen fourteen cases of a peculiar and dangerous acneiform skin disease in an electrolytic factory at Motte-Breuil, near Compiègne, and has studied its characters. The first symptoms appear from fifteen days to five months after the workman enters the electrolytic chamber. The eruption usually commences on the face, and may assume one of two forms. In more than half, a red blush accompanied by œdema and swelling round the eyes, somewhat like erysipelas, comes out suddenly on the face, at times associated with nodosities of a reddish colour. It attains its maximum intensity in a day, but lasts a fortnight, then vanishes as speedily as it came, and is succeeded by crusts. Comedones, nodosities, and sebaceous cysts then ensue, and become generalised over the body. In other cases comedones show themselves from the outset. The last region to be attacked is the genital, and this only after eight to twelve months' continuous employment. At the same time the skin becomes hard, especially round the eyes, on the cheeks, nose, and forehead; while these and the hair grow black, as if they had been exposed to smoke. Conjunctivitis, laryngitis, and pulmonary catarrh develop, and the patient wastes. There is a dry cough, becoming moist at a later stage, with copious expectoration. Should there be a tendency towards tuberculosis, this is not long in declaring itself—all the readier if, as too frequently occurs, there is addiction to alcohol. Great drowsiness is complained of; they hardly speak; and if in hospital, sleep uninterruptedly, hardly troubling themselves about their complaint. The kidneys commonly continue unaffected, but, after labouring for a year or little longer in the factory, the man becomes a complete wreck, and treatment avails little, if at all. The main difficulty in prophylaxis is to get rid safely of the hydrogen, the cause of the acne, and at the same time to avoid an explosion, to obviate which it is found necessary to close the channels of escape. Various minor suggestions are made to minimise the risk, mainly better ventilation or covering over the troughs, careful ablutions with acidulated water, and vaseline inunction.

ACNE AND SYCOSIS TREATED BY EXPOSURES TO RÖNTGEN RAYS.

OUDIN, Barthélemy, and Darier have shown in studies of alopecia in guinea-pigs, produced by Röntgen rays, that the effects on the epithelial structures of the skin are to increase the vitality of the least differentiated elements, while the differentiated ones, nails, hairs, and glands, undergo retrogressive changes, and atrophy. Another property is their inhibitory action on the formation of pus in the skin; this is shown in the cleaning up of ulcerated surfaces exposed to their influence. Following this hint, Pusey (*Journ. Cutan. and Genito-Urin. Dis.*, New York, May 1902) has, since August 1901, treated a number of intractable cases of acne in this way. In all he employed a fairly soft tube at a distance of 15 cms., and for a period of five minutes. A light which shows as a faint green glow in the tube is, he believes, amply sufficient. The treatment has in each case been stopped at the first sign of pigmentation or erythema, and in no case has improvement failed to appear simultaneously with the development of these evidences. He thinks that such cases are more susceptible to the rays than the average. In a series of eleven cases the number of exposures varied from seventeen to forty-one. In some there is mention of slight atrophy resulting, but no undesirable effect was produced, and the integument was left smooth, soft, and clean-looking. In one case of sycosis, in which the trichophyton was not found, and which had resisted eight months' very active medication, exposure to the X-rays for a period of three months, occasioning a slight, then rather acute, dermatitis, with subsequent alopecia, had the effect of causing total disappearance of the sycosis, though up to the time of writing the article there had been no sign of re-growth of the hair.

SUPERFICIAL VERMINOUS SKIN AFFECTIONS.

BALZER and Schimpff observe that disorders of this nature are seldom alluded to in works on dermatology, and relate (*Ann. de dermat. et de syph.*, Paris, August and September 1902) two interesting cases. One occurred in a labourer who had had for some time varicose ulcers of the leg. These, by the advice of a friend, he dressed with the villous leaves of the tussilago, leaving them in position for days. Sleeping one hot day by the side of a stagnant pond, a fly, the *Sarcophila magnifica*, deposited her eggs on the part, and, when he next changed the dressing, he found the wound swarming with maggots. These had occasioned a degree of itchiness and pain, with some increase in size of the sore. He was easily freed from the pests by baths of permanganate of potass, 1 in 5000. The other was a woman in a wretched condition of filth, who came to the Saint-Louis Hospital, with her hair swarming with pediculi, soaked with pus, and exhaling an intensely fœtid odour. Multitudes of maggots, in this case the larvæ of one of the species of *Lucilia*, crawled about through the hair. Those and the pediculi were at once destroyed by thorough soaking with petroleum. Singular to state, when the scalp was examined, after washing and combing, it was found intact, not even showing signs of irritation.

DISEASES OF CHILDREN.

UNDER THE CHARGE OF

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Tetany and the Myotonia of Infancy.

M. Hochsinger (*Rev. mens. d. mal. d. l'Enf.*, Paris) describes a condition which he defines as a myotonia of nurslings, and which he regards as a neurosis of young infants, differing materially both from tetany and from the pseudo-tetany of Escherich.

Tetany is essentially characterised by intermittent and tonic contractures affecting chiefly the muscles of the hands and feet, and accompanied by hyperexcitability of the motor nerves and muscles. This hyperexcitability constitutes, in the author's opinion, the most essential condition of tetany, and all other symptoms must be subordinated to it. The infants do not lose consciousness. The most important symptom of this hyperexcitability is the phenomenon of Chvostek, which consists in the sudden contraction of the orbicularis palpebrarum on tapping over the site of the branches of the facial nerve.

Another sign pointing in the same direction, and frequently associated with Chvostek's phenomenon, is Trousseau's symptom. Neither of these phenomena is present in cases of myotonia, but the author describes a symptom occurring in this condition which he defines as "the phenomenon of the fist," which consists in a contraction of the hand on pressure being applied to the nerves of the brachial plexus, and which is only seen in infants of from 6 to 8 weeks old. This sign is not dependent upon hyperexcitability like Trousseau's symptom, but upon the imperfect development of the inhibitory centres which preside over the reflexes. True tetany is to be regarded as exclusively a neuromuscular affection developed on a rachitic foundation. According to Kassowitz, the largest number of cases of tetany occur during the spring months, completely disappearing as the summer advances, which corresponds to the time of the year during which rickets is most prevalent. Myotonia, on the other hand, has no association with rickets. It usually develops during the course of gastro-intestinal attacks, from auto-intoxication, and, like them, occurs chiefly during the autumn months. The author summarises the differences between the two conditions in the following propositions:—

The contractions of myotonia are persistent, and last for several weeks, whereas in tetany they are intermittent and paroxysmal. In tetany the attacks come on suddenly, while in myotonia the onset is gradual. In myotonia there is no mechanical or galvanic hyperexcitability of the nerves or muscles, and there is no facial irritability. Neither laryngo-spasm, nor the tonic and intermittent spasm of the respiratory muscles, which occur so frequently in tetany, are ever present in cases of myotonia. Myotonia occurs during the early weeks of life and during the autumn months, whereas tetany appears at a much later stage of infancy, and almost invariably in spring. Myotonia is never associated with rickets, while the relationship between tetany and rickets is a very constant one. The contractions have a tendency to recurrence in tetany, while in myotonia the attack disappears with the cause. The treatment by phosphorus, which gives excellent results in tetany, has no effect on the spasms of myotonia. In tetany the fingers are usually included in the spasm, whereas in myotonia the fingers are not involved, the contracture being limited to the hand.

THE LEUCOCYTE COUNT IN THE SUMMER DIARRHŒAS OF CHILDREN.

IN an interesting and exhaustive paper on this subject (in *Johns Hopkins Hosp. Bull.*, Baltimore, July 1902), Messrs. Knox and Warfield briefly summarise their conclusions as follows:—(1) A differential count of leucocytes in the blood of well children under 2 years of age, when compared with the blood of adults, shows that there is a relative increase in the small mononuclear elements, and a decrease in the number of polymorphonuclear cells. (2) In the summer diarrhœa of infants the number of leucocytes in the blood is usually increased, but the count of the white cells varies within such wide limits, even in the milder forms of the affection, that a high or low leucocytosis cannot be regarded as of diagnostic value. (3) In the simple dyspepsias of childhood, a differential count of the leucocytes does not show any marked variation from that of a healthy infant, but as the case becomes more severe in type there is apparently a progressive increase in the polymorphonuclear neutrophile cells, and a decrease in those of the small mononuclear variety, thus presenting a picture more like that of adult blood. (4) Polymorphonuclear leucocytosis is an indication of an intoxication with decomposition products in the intestine, or of the toxines of pathological bacteria, *i.e.*, it takes place both in the cases of acute intestinal poisoning and in the more severe forms of ileocolitis. (5) The cases of simple infantile atrophy present a nearly normal differential leucocyte count, but an increase of the polymorphonuclear cells indicates the setting in of an inflammatory intestinal complication.

CONGENITAL ECTOPIA OF THE KIDNEY.

CONGENITAL ectopia may be distinguished from the acquired condition (floating kidney), in that—(1) the kidney is always permanently fixed in position in the absence of any inflammatory adhesions; (2) its shape is rarely normal, often profoundly altered; (3) its arteries are numerous, and arise separately from the nearest arterial trunks—bifurcation of aorta, iliac arteries, middle sacral, etc.; (4) the ureter is shorter than its fellow, and takes the most direct line to reach the bladder. The anomaly most commonly affects the left kidney, and the organ is usually placed at a lower level than normal, only very exceptionally having been found in a higher situation. It may be abdominal, pelvic, or abdomino-pelvic, and may be situated on the same side of the body as that to which it belongs, in the middle line, or even on the opposite side. The other kidney may be normal or similarly affected.

Clinically, the condition often causes no symptoms, and is only discovered accidentally during an examination of the abdomen or at an autopsy. The symptoms that have been noted are polyuria, digestive disturbances, constipation from pressure of the gland on the rectum, ascites and œdema from pressure on the iliac veins, causing thrombosis extending into the vena cava, and paroxysmal attacks resembling colic. Diagnosis is rarely possible before laparotomy. When the displaced organ has caused very troublesome functional disturbances, nephrectomy is the treatment recommended; but some surgeons consider that by simply stripping the capsule they ensure fixation of the organ, and thus effect a cure of the condition.—*Med. Chron.*, Manchester, September 1902, p. 407.

PERITONITIS FROM THE VULVO-VAGINITIS OF CHILDREN.

COMBY considers that gonococcic peritonitis is by no means an uncommon complication of vulvo-vaginitis; and in a recent paper on the subject he describes eight cases which he had under his care within the last two years in the Hôpital Trousseau and in the Hôpital des Enfants Malades. In some of the cases in which peritonitis supervened, the vaginal discharge was in an acute stage, while in others it was chronic. Comby believes that peritonitis only follows in cases of gonococcic vulvitis, and that cases of vulvitis caused by streptococcic or staphylococcic infection are never complicated by peritonitis. The infection passes by the vagina, uterus, and tubes to the peritoneum. The onset is usually sudden, and occurs in a child in apparently good health, for even in those cases terminating fatally the vulvo-vaginitis has seldom been of a severe type. The abdomen becomes tender and tympanitic, the child vomits repeatedly, lies with the legs crossed, dreads the slightest touch, and screams with pain. The temperature rises perhaps to 104° F., but, in spite of such high fever, the extremities remain cold and cyanosed. Frequent micturition occasionally occurs, and diarrhœa and constipation alternate with each other. The duration of the symptoms is from one to eight days.

The diagnosis may be very difficult, as, when peritonitis occurs, vulvo-vaginitis seldom suggests itself as a cause, and even if it does, it may be so slight as to escape notice. Appendicitis is usually, and often wrongly, suspected. In all cases of peritonitis in children the external genitals should be examined, and if vulvo-vaginitis is discovered, the question of gonococcic peritonitis should be entertained. The prognosis is good on the whole, many cases recovering, and relapses are exceptional.—*Arch. de méd. d'Enf.*, Paris, September, p. 513.

REPORTS OF THE MEDICAL SOCIETIES.

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Medico-Chirurgical Society. — *December* 3, 1902. — Sir **T. R. Fraser**, President, in the Chair.—Dr. **Edwin Bramwell** showed a case presenting symptoms pointing to a lesion limited to the first right dorsal nerve root.—Dr. **Melville Dunlop** showed a case of unusually high temperature in an infant.—Mr. **G. L. Chiene** showed an infant, æt. 8½ months, operated on, four months ago, for acute intussusception.—Mr. **Caird** showed (1) A patient with old fracture of the olecranon wired for inefficient fibrous union; (2) a female patient, æt. 23, after excision of half the tongue and glands for epithelioma.—Mr. **David Wallace** showed a patient after enterectomy for intussusception of ileum secondary to intestinal papilloma.—Dr. **Chalmers Watson** showed a case of lupus vulgaris shown at the July meeting.—Dr. **Aitchison Robertson** showed a multiple stethoscope adapted by himself for clinical instruction.—Dr. **Dawson Turner** showed an apparatus for the production of high frequency electrical currents for the treatment of malignant and other diseases.—Dr. **David Waterston** showed specimens exhibiting the development of the brain.—Mr. **G. Chiene** showed specimens and photographs from cases of intussusception.—Mr. **Alexis Thomson** showed a melanotic sarcoma of the parotid and cervical glands removed by operation.—Mr. **Caird** showed—(1) Preparations of tongue from case exhibited, with microscopic sections of primary growths and lymphatic glands; (2) Cæcum, ileo-cæcal valve, remains of appendix, and portion of ileum removed from tuberculous appendicitis (end-to-end suture—recovery).—Dr. **Chalmers Watson** showed photographs to illustrate the treatment of lupus vulgaris.—Professor **Annandale** read a paper on some practical suggestions in operative surgery. The suggestions dealt with—(1) The operation for re-formation of the nose, in which the tissue of the little finger is used for filling up the gap; (2) after plastic operation for rodent ulcer, the drawing up of the lip can be corrected by nailing the lip to the bone, after freeing it and drawing it down; (3) to plug the trachea in excising the larynx, the most satisfactory thing to use is a solid rubber ball; (4) in colotomy for incurable disease of the rectum, it is better to cut the gut across and stitch up the lower portion, so that nothing gets into the rectum; (5) in operating for undescended testicle, it is better to fix the testicle in the scrotum than to remove it.—Dr. **Byrom Bramwell** read a paper on "Syphilis and Life Assurance," an abstract of which appears in this issue.

Clinical Meeting.—*Wednesday, December* 17.—Dr. **Craig**, in the absence of the President, in the Chair.—Dr. **Chalmers Watson** showed —(1) Two cases of ichthyosis simplex; (2) cases of skin disease, to illustrate treatment by myelocene.—Mr. **Alexis Thomson** showed two cases of chronic gastric ulcer, with pyloric obstruction treated by gastroenterostomy.—Dr. **Byrom Bramwell** showed a case of tabes with severe gastric crises, in which extraordinary improvement has resulted from X-ray treatment.—Mr. **Stiles** showed—(1) A boy, after operation for hydatid cyst of liver; (2) a girl, after operation for congenital urinary umbilical fistula; (3) a child, after intestinal anastomosis, stricture of the lower end of the ileum due to tuberculous disease of the ileo-cæcal region.—Mr. CAIRD showed a patient after removal of bullet from pelvis.—Dr. W. ALLAN JAMIESON showed a case of xeroderma pigmentosum, after treatment by the X-rays.—Dr. PEARSON, for Dr. CAVERHILL, showed several tuberculous patients after treatment on Nordrach lines.—Dr. BRUCE showed a simple form of hot-air electric bath.—Mr. MILES showed—(1) Prostate removed by perineal operation; (2) tuberculous disease of cervical vertebræ, showing extreme degree of narrowing of the cord; the patient died suddenly from displacement of vertebræ; (3) two specimens of spina bifida; (4) hæmatoma of scrotum from newly born child.—Dr. BRUCE showed transverse sections of the thoracic viscera from a case of bronchitis and emphysema.

EDINBURGH OBSTETRICAL SOCIETY.—*December* 10, 1902.—Dr. JAMES RITCHIE, President, in the chair.—SPECIMENS.—Professor SIMPSON showed—(*a*) Specimens of exomphalos and anencephalus; (*b*) three fibroid tumours, one complicated with large ovarian cyst and umbilical cyst, another where the sloughing portion of the tumour had been previously removed, the third showing diseased condition of the ovaries. —Dr. BERRY HART showed—(*a*) Calculus of the kidney pelvis removed by lumbar incision; (*b*) tubal mole; (*c*) cystic ovaries, with marked adhesions.—Dr. SCOTT MACGREGOR showed—(*a*) Ovarian tumour; (*b*) cancerous uterus removed by vaginal hysterectomy.—Dr. LAMOND LACKIE showed soft uterine fibroid removed by abdominal hysterectomy. —Dr. W. FORDYCE showed extra-uterine gestation sac.

COMMUNICATIONS.—Dr. BREWIS read, "Note on Two Cases of Cancer of the Cervix at the Fifth Month of Pregnancy, treated by Panhysterectomy; with remarks on the treatment of cancer during pregnancy." He read the particulars of the cases which recovered, and referred to their subsequent history. He then made observations on the surgical treatment of cancer during pregnancy—(1) In cases where the disease is confined to the uterus; (2) in cases where the disease has extended beyond the uterus.—Dr. BERRY HART read a paper "On the Relation of Hydatid Mole to Deciduoma Malignum, illustrated by Microscopes and Photographs." The structure of the covering of the early villus was considered, and, after that, the microscopic anatomy of the hydatid mole, and of a special case where subsequent scraping showed apparent threatening of deciduoma malignum. The patient is, however, near the end of a full-time pregnancy now.—Dr. LAMOND LACKIE read a paper on "Some Cases of 'Non-septic' Puerperal Pyrexia," which will appear in the next number of the Journal.

GLASGOW MEDICO-CHIRURGICAL SOCIETY.—*December* 1902.—A discussion on Anæsthetics, introduced by Drs. DAVID LAMB, G. P. BOYD, A. BROWN KELLY, and ALBERT GRAY. Dr. Lamb discussed the relative merits of chloroform and ether. He gave statistics showing that ether was safer than chloroform; in obstetrics chloroform was as dangerous, when profound anæsthesia was required, as in other surgical operations. When administered to children, chloroform was not devoid of danger, but treatment was more successful when dangerous symptoms arose. The want of safety was the main objection to chloroform. Ether was safer than chloroform; but it was contra-indicated in certain conditions. Pneumonia following the administration of ether was not frequent if the ether was pure and the patient was not exposed to cold. A mixture of chloroform and ether was regarded as the best anæsthetic for dangerous cases. He recommended the use of Rendle's mask. Dr. Gray dealt with local anæsthesia. Cocaine should not be used in watery solutions for application to mucous membranes. The best for this purpose was a 10 per cent. to 20 per cent. solution in rectified spirit, or equal parts of rectified spirit and anilin. This was not suitable for ophthalmic work, but was the only solution which would produce anæsthesia of the tympanic membrane without causing destruction of the tissues. Eucaine was less poisonous than cocaine, but was more irritating and less anæsthetic. To prevent symptoms of cocaine poisoning, it was advisable to use a solvent such as anilin, which would not diffuse rapidly through the capillaries and lead to too rapid absorption. Dr. Brown Kelly discussed the uses of bromide of ethyl. He regarded it as eminently suitable for short operations, such as removal of tonsils. The patient should be prepared as for chloroform, and might be in the recumbent or sitting posture. Under twelve years of age the dose was 1½ to 2 drms.; over that, 2½ to 3½ drms. The anæsthetic was poured on to a piece of lint folded three times, which covered the nose and mouth so that all air was excluded. Stertor, the symptom that anæsthesia was complete, came on in from 60 to 70 seconds in children, and in 1½ to 2 minutes in adults. Insensibility lasted 1½ minutes in well-grown children, longer in children under five, less in adults. The dangers were, asphyxia and syncope. Dr. Paton Boyd described the apparatus and method of administration of nitrous oxide and oxygen. He said it was an excellent anæsthetic for short operations.

FORFARSHIRE MEDICAL ASSOCIATION.—*December* 4, 1902.—Dr. A. J. DUNCAN, in the chair.—Dr. DON showed—(1) A girl with favus on the breast and back, and without infection of scalp. Others of the family were affected with favus in the same situation. (2) A man, æt. 77, with herpes of the left buttock, thigh, calf of the leg, and foot.—Dr. TRAILL showed photos of a child who had suffered from a peculiar form of dermatitis, taken before and after treatment, which consisted in the application of a 10 per cent. ichthyol ointment round the raised patches and arsenic internally.—Dr. TEMPLEMAN gave an account of a severe case of typhoid fever which showed, post-mortem, no intestinal lesion, merely enlargement of the mesenteric glands. The symptoms of the case were those of a severe case of typhoid.—Dr. M'GILLIVRAY exhibited a portable storage battery, which could be used for all kinds of eye work, cautery, electrolysis, etc.—Professor KYNOCH showed an unruptured tubal gestation removed by abdominal section from a woman, æt. 31, and also a subserous uterine fibroid removed by operation from a woman, æt. 44, on account of its impaction in the pelvis.—Dr. COLMAN, Broughty Ferry, read notes of three cases of diphtheria which illustrated various sequelæ of diphtheria.

MONTHLY NOTES
ON METEOROLOGY AND VITAL STATISTICS.

By A. LOCKHART GILLESPIE, M.D., F.R.S.E., F.R.C.P.Ed.,
MEMBER SCOTTISH METEOROLOGICAL SOCIETY.

METEOROLOGICAL MEANS FOR THE EAST OF SCOTLAND DISTRICT, FOR THE FOUR WEEKS ENDING NOVEMBER 22, 1902; AND FOR THE YEAR FROM JANUARY 1.

	TEMPERATURE.			RAINFALL IN INCHES.		SUNSHINE. HOURS.		Mean Daily Variability of Temperature.
	Mean.	Accumulated Day-Degrees.		Actual.	Accumulated from Jan. 1.	Actual.	Accumulated from Jan. 1.	
		Above 42°.	Below 42°.					
Mean	42°·0	*[1] 89° [2]2332°	75° 740°	3·0	28·2	54	1258	2°·3
Observed	45°·0	[1] 123° [2]2002°	37° 791°	1·6	22·0	52	1105	2°·0
Difference	+3°·0	[1]+34° [2]−330°	−38° +51°	−1·4	−6·2	−2	−153	−0°·3

VITAL STATISTICS.

MORTALITY IN FOUR LARGE TOWNS IN THE EAST OF SCOTLAND (EDINBURGH, DUNDEE, ABERDEEN, AND LEITH), DURING NOVEMBER AND SINCE JANUARY 1, 1902. Actual Numbers and Rate per 10,000 per annum.

	TOTAL.		CONSTITUTIONAL DISEASES.		CIRCULATORY SYSTEM.		RESPIRATORY SYSTEM.		NERVOUS SYSTEM.	
	No.	Rate.	No.	Rate.	No.	Rate.	No.	Rate.	No.	Rate.
Deaths expected and Mean Rate for 1891–1900	[1] 1232 [2] 12,885	205·0 195·0	220 2558	36·8 38·6	110 1213	18·4 18·4	298 2396	49·6 36·3	126 1459	21·0 22·3
Actual Deaths and Rate per 10,000	[1] 934 [2] 11,626	155·0 176·0	279 2684	46·4 40·5	98 1291	16·3 19·5	190 2148	31·6 32·5	99 1268	16·4 19·5
Difference from Mean	[1] −298 [2] −1259	−50·0 −19·0	+59 +126	+9·6 +1·9	−12 +78	−2·1 +1·1	−108 −248	−18·0 −3·8	−27 −191	−4·6 −2·8

	DIGESTIVE SYSTEM.		URINARY SYSTEM.		PNEUMONIA.		PHTHISIS.		CANCER.	
	No.	Rate.	No.	Rate.	No.	Rate.	No.	Rate.	No.	Rate.
Deaths expected and Mean Rate for 1891–1900	81 898	13·4 13·5	32 337	5·3 5·2	107 960	17·9 14·5	102 1250	17·0 18·7	55 593	9·1 9·0
Actual Deaths and Rate per 10,000	89 875	14·8 13·2	26 355	4·3 5·4	96 1078	15·9 16·2	81 1065	13·4 16·1	73 693	12·1 10·5
Difference from Mean	+8 −23	+1·4 −0·3	−6 +18	−1·0 +0·2	−11 +118	−2·0 +1·7	−21 −185	−3·6 −2·6	+18 +100	+3·0 +1·5

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* NOTE.—The figure [1] denotes the data for November, [2] for year to date.

The four weeks ending 22nd November were very much warmer than usual; the mean daily temperature being 3° F. over the average. This was due to increased warmth as well as to decrease (and the more) of cold. The rainfall was only slightly more than half the average; the hours of bright sunshine not quite up to the mean number; the variability of temperature less than usual. The temperature values for the eleven months have markedly changed from those relating to the first ten months of 1902; the total deficiency of degrees of warmth falling from 15·5 per cent. to 12·4 per cent. The deficit in the rainfall has, however, reached 21·9 per cent., in place of 19·3 per cent., below the normal.

The number of deaths recorded during November presents a decrease equal to 24·1 per cent. under the average—largely owing to the decreased number of deaths from respiratory causes (– 36·2 per cent.), among which the deaths from pneumonia were 10·1 per cent. below the average; circulatory, nervous, phthisical, and urinary causes also contributing. Digestive, constitutional, and cancerous causes show increases. Influenza caused eleven deaths. For the eleven months the decrease in the number of total deaths recorded is remarkable—equal to 9·7 per cent. of the total expected. Towards this decrease, respiratory, phthisical, and nervous causes chiefly contributed; cancerous and pneumonic diseases, on the other hand, showing increased death-rates.

EDINBURGH MEDICAL JOURNAL.

EDITORIAL.

IN common with every member of the medical profession who acknowledges the University of Edinburgh as his Alma Mater, we beg to offer our warmest congratulations to the new Principal. That he may be long spared to carry out his duties with that ability which has characterised his work in the past, will be the earnest wish of all members of the community.

The opinion is occasionally expressed that the Principal of a University is but an ornate figurehead—a lath painted to represent iron—that he is, in short, an expensive luxury. Such an opinion, though often expressed, is erroneous, or perhaps, to be more accurate, the duties of a Principalship should be so carried out as to commit this and similar opinions to the limbo of futility. Whilst our past history may occasionally have provided food for thoughts like these, we are very far from believing that the Principal of a University is a mere useless ornament. He is, and ought to be, a tower of strength, not only to all departments of his own University, but also to any sister or closely allied Colleges.

Whilst there are many subjects which will earnestly demand the immediate attention of the Principal, there are two of outstanding importance—the welding of intra- and extra-muralism into one great and harmonious entity, and the adoption by the University of the English system of three terms per annum.

The Principal who succeeds in obtaining the first of these two eminently desirable reforms will confer the most lasting benefit upon the University of Edinburgh, and will earn for himself her undying gratitude.

There can be no doubt, from the shadows cast by coming events, that the University of London will, in the near future, prove herself the most formidable rival which has yet come to grips with our own University. It is a well-known fact, patent to all, that the various teaching hospitals in London are silently and quietly, but nevertheless efficiently, strengthening their scientific departments, by the introduction of men who are devoting their whole time to those departments. It is an open secret that the objective of this policy is incorporation with a teaching University—a living University of London. Once this incorporation is accomplished, which it inevitably will be, the London student will have the choice of half-a-dozen professors in every subject of his curriculum, whilst the Edinburgh student will continue to struggle with his one and only professor, and his numerous extra-mural difficulties. The moral is not far to seek. The remedy is at hand, and the new Principal will do well to remember that prevention is better than cure. With his financial abilities and the apparently illimitable amount of the millions at his disposal, the solution of this problem of teaching incorporation should be neither difficult nor long delayed.

The second object to which we should desire the Principal to devote his early attention—the adoption of three terms per annum—is already well advanced upon its road to realisation. The question should appear on the billet of University Court business at a very early date, and much will then depend upon the attitude of the Principal himself. It is surely not too much to expect that he will take such steps in this matter as shall justify, in the eyes of his constituents, his election to his present position of acknowledged head of the University.

There are obviously many other points to which we should desire the new Principal to devote his time and thought, but those which we have specially mentioned appear to us to be the most pressing. The daily trivialities of academic routine may with advantage be left to other and less important hands. The Principal must prove himself the broadminded statesman required as head of Edinburgh education, and not the mere clerk of a department; in other words, we desire to see him pursue the substance of efficiency instead of the shadow of finance.

AMONG the many vexed questions by which arthritis deformans is surrounded, not the least troublesome is concerned with its etiology. During the last few years two chief lines of thought have occupied the minds of physicians. From one point of view, eloquently urged by Kent Spender, the causation of the affection seems to lie in a disturbance of the central nervous system, whereby trophic effects upon the joints and muscles result. From another standpoint, ably argued by Bannatyne, it is more probable that the disease has its origin in some microbic agencies. Between these two suppositions modern opinion has oscillated for some years.

A very important advance has recently been made by Dr. Poynton and Dr. Paine, whose researches upon the production of acute rheumatism are well known. By the present investigation they have been enabled to throw a considerable amount of additional light upon the probable origin of rheumatoid arthritis. A patient, accidentally poisoned by carbolic acid, came under their observation, and at the necroscopy it was discovered that some of his joints were the seat of rheumatoid arthritis. The joints contained a clear fluid with a little flaky exudation. The synovial membranes were much thickened, the cartilages were greatly destroyed, and the bones were considerably eburnated where subjected to pressure. There was no evidence of any gouty affection, or of any previous attacks of rheumatic fever, and the diagnosis of arthritis deformans seems to have been amply justified. From the contents of the joints fresh films showed the presence of a few diplococci, and sections of the synovial membrane also revealed the presence of the same organism, more especially in the fringes. Cultures were made with the acid milk medium, previously found by the observers to be useful in the case of the rheumati-diplococcus, and these cultures showed a growth of diplococci. The organisms were isolated on blood-agar plates, and thence transferred to blood-agar tubes. The experimental results following upon these bacteriological observations are of extreme interest. The blood-agar cultures were injected intravenously into a rabbit, and two days after inoculation there was arthritis of the left carpus; a little later, of the left shoulder and of both knee-joints. The heart revealed no clinical evidence of any disturbance. A fortnight afterwards, upon the death of the animal, each of the affected joints was found to contain a white fluid containing flakes of exudation, in which diplococci were present. No erosion of the cartilages or affection of the heart was found. In a subsequent experiment, inoculation was followed by some synovitis of the right knee-joint, along with atrophy of the thigh and leg. After death it was found that the joint contained an excess of a clear fluid, and that the articular surfaces were flattened, thickened, and rounded, with a tendency towards lipping. In two places on the outer condyle of the femur there was erosion of bone and destruction of cartilage. The tibial cartilage was also roughened and pitted. In the one case, accordingly, a severe multiple arthritis followed inoculation, while in the other there was a monarticular arthritis with erosion of cartilage, alteration of osseous articular surfaces, and atrophy of contiguous muscles.

During the last decade several observers have described organisms in the case of rheumatoid arthritis, and have asserted that they were the cause of the disease. Schüller, for example, described bacilli with polar staining. Shortly afterwards, Bannatyne, Wohlmann, and Blaxall also described a bacillus, and in the same year Chauffard and Raymond isolated a diplo-bacillus from the synovial fluid. The organism obtained by Bannatyne and Wohlmann was successfully cultivated by Blaxall; that, however, found by Chauffard and Raymond yielded no cultivations. Still more recently, von Dungern and Schneider discovered a minute diplococcus in a case of arthritis deformans, which appeared to have followed rheumatic fever. This diplococcus, when injected into the knee-joint of a rabbit, gave rise to rheumatoid changes. The present investigation, following upon the interesting results just mentioned, must be regarded as of the greatest significance. The observers who have conducted these recent researches point out that the experimental arthritis which they have obtained is entirely different in type when compared with that which they produced with the diplococcus of rheumatic fever; and they conclude, from a careful consideration of their results, that the diplococcus was the cause of the arthritis in the case from which it was isolated, as well as of the condition produced by experiment in the rabbit.

This investigation is of an importance which it would be difficult to exaggerate, and it would be idle to deny that it lends powerful support to the idea that rheumatoid arthritis is of toxic origin. The muscular atrophy, which is often claimed as a proof of nervous origin, has also, by Poynton and others, been very justly claimed as with equal probability to be ascribed to an arthritic origin, and the present research undeniably supports this latter contention. It will be remembered that Kent Spender, in the important article which he contributed to Allbutt's "System," spoke of "the grave poisoning of nerve centres, and the disturbed nutrition which is a result of it." Is it not probable that the seat of the toxic processes is local, as Bannatyne has contended, and that the protean clinical manifestations which are grouped about the central symptoms are partly of reflex origin, and partly due to general poisoning from the local lesion? In this connection, attention must be recalled to the interesting contribution of Llewelyn Jones, which appeared in the last number of this Journal, in which he pleaded for a compromise between the two opposing theories. Until further information has been obtained by means of extended experimental investigations, it would be premature to express any definite opinion, but there can be no doubt that the researches which have been analysed in this article go a long way to prove the toxic origin of the disease.

The Care of the Inebriate.

THE Annual Report of the Government Inspector of Inebriate Houses in England is, more than anything else, a reminder of the negligence of the State and of society in this country to grapple in a serious and comprehensive manner with the problem of inebriety. The present position of the question has, in the light of experience and of the scientific knowledge of the subject, become a crying scandal. It is much to be feared that the medical profession is to blame in great measure for this neglect. Many members of the profession are indifferent, others are timorous or undecided, while not a few are so hopelessly prejudiced or ignorant as to declare their deliberate belief in the old superstition that drunkenness is not a disease, but a crime. No doubt, if there were no drink there would be no drunkards, which is as much a truism as to say that if there were no tubercle bacillus there would be no phthisis. It is a strange obscuration of reason which prevents the acknowledgment of morbidity in the one instance because the toxic agent is believed to be consciously ingested, and allows it in the other where it is unconsciously received. Intemperance is doubly a disease. The morbid inclination which leads to habitual over-indulgence, and which manifests itself symptomatically as a "craving" for drink, is a neurosis, while the "craving" of the true drunkard is an obsession, culminating, in pronounced cases, in an impulse. There are also the secondary effects, which vary from what is fantastically described as a "paralysis" of the will up to complete moral degradation, accompanied by gross cellular degeneration. Looked at from another standpoint, there are several kinds of drunkards. There is the hopeful curable drunkard, the hopeless chronic drunkard, the weak-minded drunkard, and the quasi-criminal drunkard. Strange to say, legislation has, ineffectively enough, attempted to deal with the last three classes, while leaving the first piously alone, in the belief that his care fell more directly within the domain of the moral law. When the country awakens to a realisation of the fact that inebriety is a disease and not a vice, as less than a hundred years ago it made the same discovery with regard to lunacy, then the incipient curable drunkard will be its first care, with, no doubt, a due regard to the feelings of that great British fetish, "the liberty of the subject." For the present we must be content to urge on all occasions the medical aspects of intemperance, and to deplore, with Dr. Branthwaite, the fact that there is a total absence of provision for the treatment of the man or the woman who cannot afford to pay the smallest weekly contribution for his or her maintenance in a retreat.

The Responsibilities of Members of the General Medical Council.

A PERUSAL of the reports of the recent session of the Council reveals the fact that a considerable percentage of the members present are either too bored to give the matter under discussion their consideration, or else confess themselves incompetent to express an opinion. Our justification for these remarks depends on the details of the voting supplied by the press. In two instances the house divided, when it appeared that on one of these occasions seventeen votes were recorded in favour of the clause under consideration, three against, whilst ten members did not vote at all. On the other occasion to which we refer, thirteen voted for the previous question, eight against, and eight did not vote. In neither instance can the result be considered satisfactory. There are no doubt excuses to be found, but, without a knowledge of these, the figures seem to point to a lack of decision on the part of our professional representatives.

"Personalism" and the General Medical Council.

THE condensed reports of the proceedings of the General Medical Council, as published in the press, necessarily furnish but a limited account of the discussions. We learn, however, that the vexed question of the possibility of personalism has now been definitely settled, at least so far as the precautions to be taken against such an offence are concerned. The precautions, we are told, will consist in the candidates for registration being required to fill up certain details, such as date and place of birth, on an official form, in their *own handwriting*. Identity is apparently to be established, in suspicious cases, by a reference to the correctness of these details and a comparison with the writing. It seems to us that a fraudulently inclined person, such as would be guilty of personation, might easily overcome these obstacles. In our opinion, the suggested scheme is cumbrous and uncertain, especially when we have at hand so ready and simple a method as that of identification by finger prints. It may be that this means of overcoming the difficulty was suggested, and that exception was taken to it on the grounds that it savoured somewhat of Scotland Yard; but it may be pointed out that its adoption would have proved an efficient means of protecting the honest, whilst it would have acted not only as a powerful deterrent to those of guilty purpose, but would have rendered such acts of personation as now occur impossible. After all, we have still something to learn from the Chinese.

Substitution.

MESSRS. BURROUGHS, WELLCOME, & CO. have been so kind as to send us a short pamphlet, published by themselves, regarding what they term "The Substitution Question." They complain that no dictionary extant gives a proper and comprehensive definition of substitution as applied to commerce. But does the meaning of the word, when applied to commerce, differ in any way from that ordinarily ascribed to it? "Substitution," replacing one thing by another, whether the substitute be like or unlike the thing replaced, or the change be openly or secretly made, surely suffices to fully answer the question. The pamphlet, it is evident, takes origin in the rather unfortunate similarity between the words tablet and tabloid, the latter of which is the registered trade-mark of the firm, and thus protected. Now, on looking up de Méric's "English-French Dictionary of Medical Terms," we find tabloid rendered into tablette: how reprehensible, yet how readily explained. Burroughs, Wellcome, & Co.'s tabloids can invariably be depended upon for nicety in pharmacy and purity of material; but is it a misdemeanour, nay, almost a crime, for a dispensing chemist to read, from the scarcely decipherable scrawl of some medical man, tablet for tabloid? Or if, having the one and not the other, both guaranteed to contain the same amount of a particular drug, to substitute one for the other, to the good of the patient and the saving of time, especially when he informs the prescriber of the same? What's in a name? Tabloids by any other name might act as well, had tablets a sure warranty of accuracy, in an emergency.

Burroughs, Wellcome, & Co. are due all praise for their admirable work in the advancement of ready-made trustworthy pharmaceutical preparations; but they should be chary of accusing, as they undoubtedly do in their pamphlet, a class of certified men in general terms of a line of conduct no less than fraudulent, without giving any specific evidence or detailed example thereof. Nor should they be so ill-advised as to quote, in support of their "Substitution Question," such atrociously bad specimens of English, pharmaceutically writ, to illustrate and support their contention, as are included in their publication.

The last sentence of the *Chemist and Druggist's* excerpt is excellent:—"In retailing, similar action takes place." Who acts similarly is obscure: substitution, the only subject of the preceding sentence, is by inference wholesale, and thus exerts itself actively. Again, the quotation from the *Anti-cutting Record* talks about "coming within the law," when it is clear that the dispenser of words instead of his drugs means "going against the law."

Surely Burroughs, Wellcome, & Co. will take a hint from Shakespeare: "Thou comest in such questionable shape!"

A pamphlet such as this will do them much more harm than good; it lacks detail; it gives insufficient references. Who is the Mr. Reid whose observations are retailed?—the when and the where unspecified.

If the firm wish to seriously discuss substitution,—and it is no doubt an important question,—let them first give facts, specify instances and circumstances, before issuing further brochures.

Kissing by favour of the Law in Virginia.

IF a certain Bill, recently introduced into the Virginian Legislature, and by a doctor too, become law, what a sad time of it the Romeos will have there! What sad disappointments the Juliets!

No male to kiss if he be unprovided with a medical certificate bearing that he is clean enough to practise, and strong enough to bear, the art. The female, it seems, may kiss as often as she please, however "smittle" her lips, or dangerous her health.

One may picture a Juliet, already supplied by her old nurse with the necessary rope-ladder, leaning over her balcony as Romeo, her Romeo, approaches, and anxiously inquiring of him if he had brought his legal permit to appose his lips against hers in osculation, ere she dare let fall the ropen rungs to "'low ascent." Romeo's words in the play, had he no certificate, were pat: "Sin from my lips? . . . Give me my sin again." Juliet's "You kiss by the book" would read, "Kiss you by the law?"

The complications which would arise from such a Bill made law were as many as ludicrous. For instance, how long would the certificates of "propriety for osculation hold good?" And for how many kisses would each run for? Would a fresh permit be required each day, or week, or year? Could a male infant kiss his mother?

If not, should he be allowed the breast? The obtainal of evidence as to who the kisser, who kissee, would also be a matter of peculiar difficulty and dubiety.

Russian Medical Literature.

THE Russian tongue is so difficult of mastery by every one who is not a Slav, that opportunities for becoming acquainted with Russian literature, writ in the vernacular, are seldom afforded to those of other nations. It is therefore very satisfactory to find that the first number of a new journal has recently appeared, devoted to Russian medical literature, original or abstracted, but published in German. The journal is named *Russische medicinische Rundschau; Monatsschrift für die gesammte russische medicinische Wissenschaft und Litteratur,* is published by Hirsch in Berlin, and edited by Drs. Lipliawsky and Weisbein of that city. A specimen number was issued last year, for the purpose of making known to those of the profession in Germany and elsewhere, who are engaged in research or literary work, the form and scope of the journal.

In addition to an original article by Dinawin of Moscow on the operative treatment of exophthalmic goître, the *Monatsschrift* contains forty-six separate abstracts and reviews of Russian papers and books on medical subjects. It is to be hoped that the venture may prove successful, so that a wider acquaintance with the work and opinions of Russian observers may be possible.

ORIGINAL COMMUNICATIONS.

ON AFFECTIONS OF THE TRICUSPID VALVE OF THE HEART, WITH A NOTE ON A PEDUNCULATED THROMBUS OCCURRING IN THE RIGHT AURICLE.

By T. WARDROP GRIFFITH, M.D., M.R.C.P., *Senior Assistant Physician, General Infirmary, Leeds.*

(PLATES III.-VI.)

THE well-known preponderance of valvular disease of the left side of the heart over that of the right is accounted for, in part, by the striking incidence of rheumatic endocarditis on its valves, especially the mitral, coupled with the fact that the aortic valve is prone to become diseased secondarily to changes in the systemic arteries, and to those conditions of increased pressure which are induced by, or associated with, imperfect elimination, renal disease, plumbism, gout, alcoholism, and sustained muscular effort. An explanation of this greater liability to disease of the valves on the left side of the heart is sought for by some in the difference between arterial and venous blood, while the smaller amount of work which the right side of the heart is called upon to perform, which is eloquently expressed by its muscular walls being much thinner than those of the left side, is also commented on in this connection; and it is pointed out that during fœtal life, when this difference does not exist, the incidence of disease on the valves of the right side is at least as great as on those of the left.

It is not, however, the object of this paper to discuss the causes of what is an undoubted fact, but rather to express and to emphasise my opinion that affections of the valves of the right side of the heart are not so uncommon as a perusal of the ordinary text-books would lead one to suppose.

During the last few months I have been engaged in the very congenial task of remounting most of the specimens illustrating diseases of the heart, in the Pathological Museum of the Medical Department of the Yorkshire College, and while doing so I have submitted all those I have dealt with to a close examination, with the result that I have been struck by the frequency with which disease of the tricuspid valve has presented itself, and, as the title of this communication indicates, my remarks are to be confined to affections of this valve.

In the comparatively small collection of about 150 specimens of cardiac disease on the shelves of our museum, I have come across no fewer than twenty-six in which there was manifest organic disease of this valve, in all of which I believe the disease to have been acquired during extra-uterine life. Among these, of course, I am not including mere dilatation of the orifice, but specimens only in which unequivocal changes or deformities of the valves existed, such as endocarditis, shrinking with thickening of the segments, or stenosis of the orifice. The only importance I attach to these figures is that they tend to show that diseases of the tricuspid will be found to be not quite so rare as has been thought. Of further statistical value they possess none, for the wealth of material from our post-mortem room is inadequately represented in our museum, and great numbers of specimens illustrating the commoner cardiac lesions are never sent to the museum authorities by those of us who are making autopsies. I may also point out that, since my attention has been especially directed to the subject, I have been on the outlook for illustrative specimens, with the result that I have added to the museum, from various sources, twelve examples of disease of the tricuspid valve, of which ten have come into my possession during the last two years, while my examination of the specimens in the museum has shown that seven of those mounted as "mitral" or "mitral and aortic" disease present changes in the tricuspid valve as well.

For some years the subject of congenital diseases and malformations of the heart has been one in which I have taken considerable interest, and, apart from such conditions as moderate patency of the foramen ovale, which is very common, increase in the number of segments of the aortic and especially of the pulmonary valve, which is not rare, slight patency of the ductus arteriosus, and other minor anomalies which are never of themselves associated with symptoms, I have had the opportunity of closely examining a considerable number of cardiac malformations of a more profound character, some of which were associated with cyanosis. Many of these specimens are preserved in the Anatomical Museum, and in some very few of them the condition of the tricuspid valve calls for comment.

In this communication I shall make no attempt to discuss the affections of the tricuspid valve fully, but my remarks shall be based, first, on those specimens in the Anatomical Museum which show congenital changes in it; secondly, I shall briefly discuss the subject of insufficiency of the valve following on dilatation; and then a passing reference to recent endocarditis will be followed by remarks on the specimens of chronic valvular mischief, which indeed form the great majority of those in our museum.

I. CONGENITAL MALFORMATIONS OF THE TRICUSPID VALVE.—These I have found to be very rare. Some of my specimens show a nodular condition of the valve close to its free margin, some of the nodules being dark red in their interior. These are similar to the nodules found sometimes in the mitral valve, and have been described by Bernays. It is pointed out by Darier that in the fœtus and in newborn children, the blood vessels of the valves pass a greater distance towards their free margins than in the adult, and that, in the course of their retraction, small islands may be left which give rise to these hæmatomata. I do not think that these are of any importance. I have sometimes wondered if it is possible that they could lay the foundation of chronic valvular disease, and thus, in some measure, help us to an understanding of any of those very numerous cases of mitral stenosis where there is not the slightest history of rheumatism or chorea, but as I have only found them with anything like frequency shortly after birth, I must conclude that they disappear before the age at which mitral stenosis becomes at all common.

Partial or complete absence of the auricular or ventricular septa of the heart has been associated, in some of my specimens, with changes in the tricuspid and mitral valves, the septal flaps of which were seen to be continuous with one another, and in one instance, where the auriculo-ventricular channel had not been divided in course of development, the single aperture was guarded by a valve with five segments—three representing the tricuspid, and two the mitral.

In one example of peculiar malformation of the tricuspid, too complicated for full description here, there was complete isolation of the septal flap, while the greater part of the anterior segment was concealed by columns of muscular tissue passing from the upper part of the ventricle downwards to the lower part of the anterior wall, as if, indeed, there had been a delamination of muscle from the inner surface of the anterior wall of the ventricle, with an apposition of this to the surface of the valve. This is a condition which I have met with to a slighter extent in another specimen both in the tricuspid and in the mitral valve.

In one of the specimens of chronic tricuspid stenosis (No. 9 in the list which follows) there is an aperture with smooth margins in the posterior part of the valve which I regard as a congenital defect.

II. Insufficiency of the Tricuspid Valve without Organic Disease of its Tissues.—In cases of dilatation of the right side of the heart, and especially such as result from the back pressure of mitral disease, the physical signs may point to there being some actual regurgitation through the tricuspid orifice.

We will not stop to enquire closely whether this is mainly due to the mere dilatation of the orifice, which is probably not the essential factor in the explanation, for the tricuspid segments are very redundant, or whether, as is more likely, it is due to a want of the sphincter-like action of the auriculo-ventricular muscle, which has been commented on by Ludwig and Donald Macalister, and to which Hesse attributes about 50 per cent. of the reduction in size of the aperture during the ventricular systole, but it is probably due to the latter, coupled with the removal of the bases of the papillary muscles to a greater distance than normal from the sectional plane of the tricuspid orifice, which must of necessity happen in dilatation of the ventricle.

It is commonly agreed that such regurgitation does occur, and probably we should all be willing to come to a definite diagnosis of its presence, if, in a case say of mitral disease, a bruit soft in character, and systolic in rhythm, should appear towards the lower part of the sternum, if the pulmonary second sound, formerly loud, should become less accentuated, and if venous pulsation, systolic in rhythm, should appear in the neck, or pulsation of the liver should become marked and expansile, while we might incline to suspect it in many instances in which some of these signs were ill-marked or absent.

It is clearly expressed in the writings of William Harvey and John Hunter, that the tricuspid is a less perfect valvular apparatus than the mitral, and certainly this is confirmed by the observations one is in the habit of making in the post-mortem room, though I am well aware that these are open to the fallacy involved in one's dealing with an organ deprived of its essential characteristic, namely, the power of physiological contraction.

The whole question of what he termed the *safety valve* action of the tricuspid was fully gone into by Mr. T. Wilkinson King in the *Guy's Hospital Reports* for 1837. I think King's term *safety valve* action has been somewhat severely dealt with, but I must say that I have read and re-read his remarkable paper with care, and that I find myself in substantial agreement with his conclusions. Full credit is given by him to those who first called attention to this peculiarity of the tricuspid, and Dr. Adams of Dublin is quoted as mentioning it in 1827, and pointing to its advantages in cases of temporary obstruction to the flow of blood through the lungs.[1]

King also it was who first called attention to a muscular band, which he correctly described as almost constant, passing from the septal wall of the right ventricle to the anterior wall close to the origin of the anterior papillary muscle, which sometimes arose from the band itself. To this structure, which he showed was present in various forms throughout the mammalia, he gave the name of the "Moderator Band." The functions attributed by Mr. King to this band have not been generally accepted by anatomists and physiologists, so that the band, when mentioned, is usually spoken of as the "so-called" moderator band, and I feel that this frame of mind, coupled with the fact that the band is commonly cut in the usual methods of opening the heart adopted in

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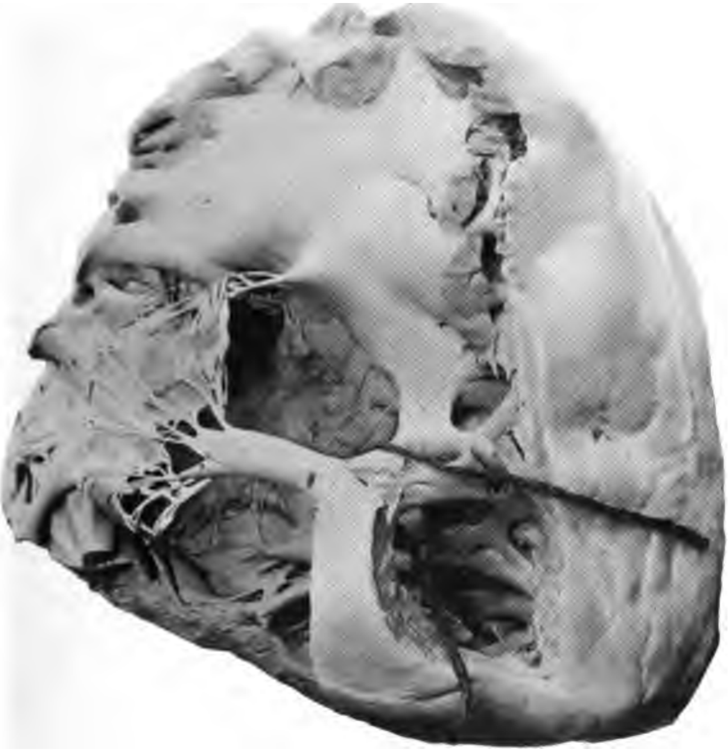
[1] In this connection, I have often thought that a slight degree of patency of the foramen ovale may prove a benefit to the individual, in the event of the occurrence of emphysema or other obstructive disease of the lung, but not of course in the back pressure of mitral disease, for it is better that, by short circuiting, some impure blood should reach the left auricle and the systemic arteries, than that one should get water-logged from back pressure, or that the right auricle should suffer from a dangerous degree of dilatation.



"Moderator" band in right ventricle of heart. A piece of string has been passed round the band which has the usual attachments described in the text.

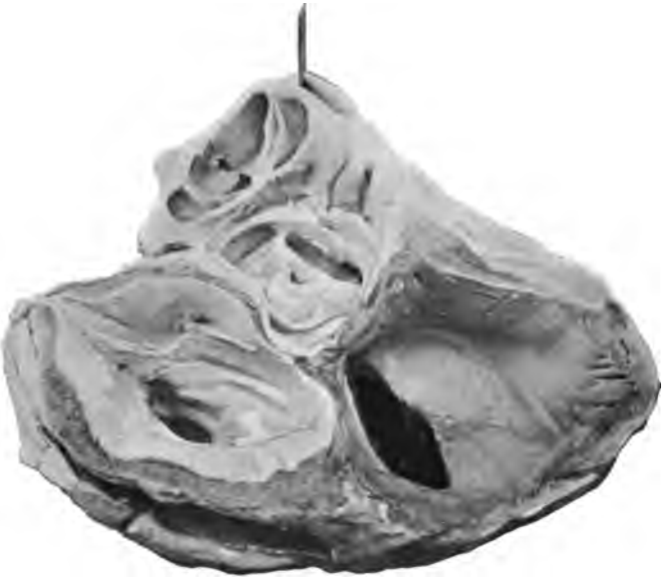


FIG. 1.—Mitral tricuspid and aortic stenosis. No. 15 in the Table.

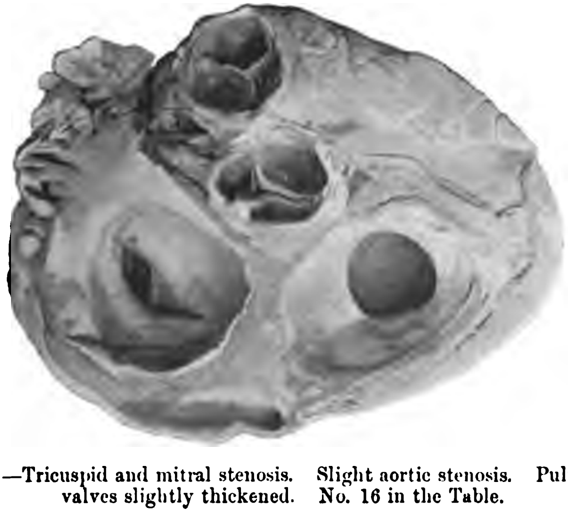
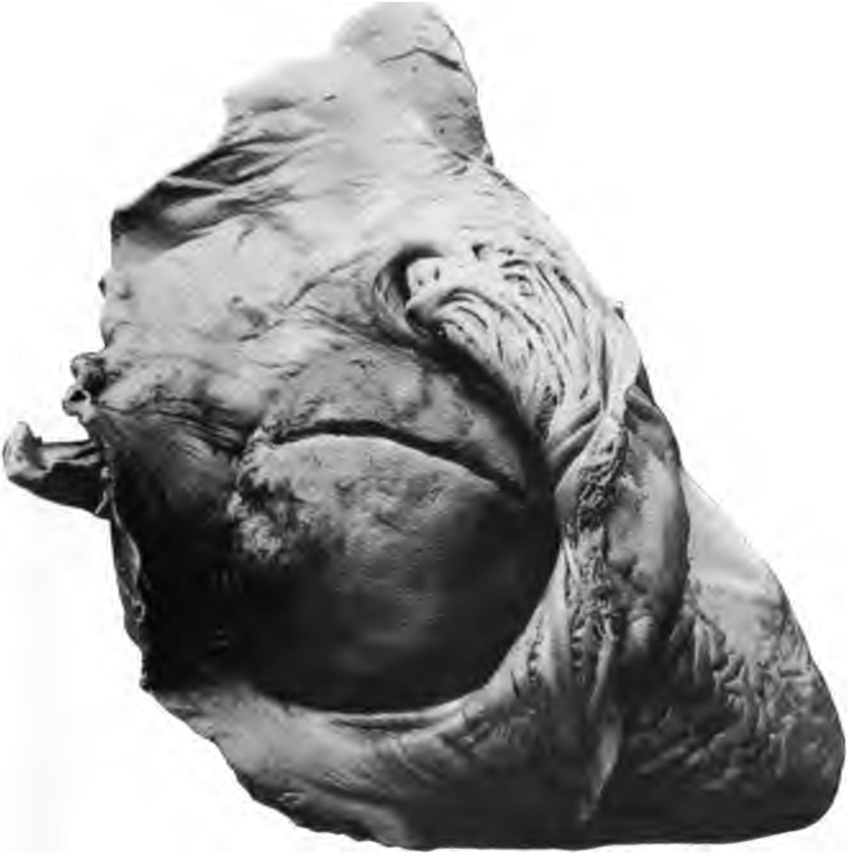
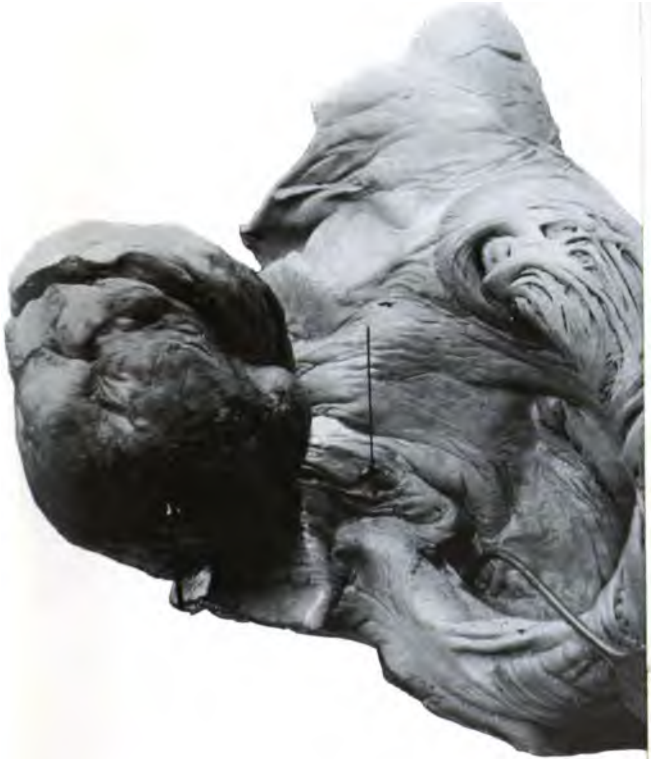


FIG. 2.—Tricuspid and mitral stenosis. Slight aortic stenosis. Pulmonary valves slightly thickened. No. 16 in the Table.



Pedunculated thrombus in right auricle of the heart, showing lower part passing down towards the auriculo-ventricular aperture.



Showing the rounded mass turned outwards on its pedicle. The aneu into the orifice of the coronary sinus, and the bristle shows the position of the fossa ovalis.

the dissecting-room, and still more in making autopsies, has led to its being regarded as only of occasional occurrence. It is, on the contrary, a remarkably constant structure, varying in development, it is true, and I rarely fail to find it when I look for it. Plate III. shows a good example, for the photograph of which I am indebted to Mr. Michael Teale. Opinions may differ as to its functions, and as to its meaning or developmental significance, for some, I believe, regard it as representing, along with other bands in the neighbourhood, the remains of the septum in the reptilian heart between the middle and right ventricles; but I incline to think that a highly specialised structure like this, which is nearly always muscular, is sometimes very strong, and has fairly constant attachments, is likely, no matter what may be its developmental explanation, to possess a function which is also specialised, and one which is not identical with that of the general mass of the ventricular muscle.

III. Recent Endocarditis.—Although there is no sharp line of division between the simple or benign and the infective or malignant forms of endocarditis, the specimens which show recent inflammatory changes may be divided into two classes according as they conform to the former or the latter. I may say that no instance of endocarditis was found affecting the tricuspid valve alone in a formerly healthy heart; in every case there were signs of former or of simultaneous disease of other valves, usually the mitral.

A. *Simple endocarditis.*—In one specimen, from a patient who died of chorea, the tricuspid and mitral valves were both affected with recent changes; in another, a fringe of recent vegetations was found close to the free margin of an otherwise healthy tricuspid, the mitral valve being stenosed but free from recent changes; in six of those specimens in which chronic changes existed in the tricuspid valve, signs of recent endocarditis were present. I am confident I have seen several examples of coincident recent endocarditis of the tricuspid and mitral valves in those who have died of chorea, and a considerable number with recent tricuspid endocarditis in autopsies on long-standing cases of mitral disease, so that the small number of specimens in our museum is misleading as to its frequency.

B. *Infective endocarditis.*—There was one specimen associated with a congenital deficiency, about a quarter of an inch in diameter, in the pars membranacea septi. In this case the aortic valve was affected along with the tricuspid and with the margin of the aperture in the septum. In another instance, infective endocarditis of the aortic valves had led by extension to perforation of the pars membranacea with secondary involvement of the septal flap of the tricuspid. Here again, I think, an exaggerated notion of the rarity of this affection might be conveyed by a study of our museum.

IV. Chronic Organic Disease of the Tricuspid Valve.—

Coming now to the specimens which show signs of long-standing disease of the tricuspid, we find twenty-two cases. In nineteen of these there was a greater or lesser degree of stenosis of the aperture, associated in every instance with thickening of the tissue of the valve and of the chordæ tendineæ, which were also in most cases shortened. In three of the specimens there was no actual stenosis of the aperture, which, however, was in each case less dilatable than normal, the tissue of the valve being thickened and the valve curtain and segments shortened.

In the mind of no one could there be any doubt as to placing the nineteen examples above referred to in the class of tricuspid stenosis, but as the criteria which may be considered to qualify specimens for admission to the second category are not perhaps so well defined, I may give those on which I have acted. We are all familiar with the somewhat unduly substantial valves met with in hypertrophy of the heart, in renal disease, atheroma and emphysema; such cases I have not included, but those only in which there was undoubted thickening and opacity of the valve, with shortening and thickening of the chordæ; those, indeed, in which I felt that any competent observer would agree with me in regarding as the result of chronic inflammation, and of necessity leading to regurgitation during the ventricular systole, apart from any consideration of possible dilatation of the right side of the heart or imperfection in its muscular contraction.

Though it will be convenient to consider some of the aspects of these two classes separately, I have numbered the specimens consecutively 1 to 22 in the accompanying table, putting those without stenosis at the beginning, as I consider that the pathological changes which have led to the condition of the valves have been identical, those namely of chronic inflammation.

A. *Specimens without stenosis.*—In none of these have I any clinical details as to sex or age. In each there was great stenosis of the mitral and a varying degree of stenosis of the aortic valve, while the pulmonary valves were normal. Signs of recent endocarditis were present on the mitral and tricuspid valve in one instance.

Bedford Fenwick, writing in the *Pathological Transactions* for 1882, was able to quote from medical literature only fifteen instances of this affection, to which he gives the name of Primary tricuspid insufficiency as contrasted with the Secondary insufficiency which follows, without structural changes in the valve, from dilatation of the right side of the heart. I cannot but think the condition is much more common than these figures would seem to indicate. Of the cases tabulated by Fenwick, eight were in males and seven in females, and it is interesting to note that mitral stenosis was present only in two cases, both in females. In no instance is it stated that the aortic valve was stenosed, though the segments were spoken of as thickened in three.

[*Continued on page* 114.

Table of Cases of Chronic Tricuspid Changes due to Inflammation.

No.	Patient under the Care of	Age.	Sex.	Condition of Valves.				Rheumatism, Chorea, etc.	Remarks.
				Tricuspid.	Mitral.	Aortic.	Pulmonary.		
1	Mr. Nunneley .	..	..	Segments shortened; valve thickened; less dilatable than normal, if not actually stenosed.	Stenosed (½ in. × ⅛ in.).	Moderate stenosis.	Normal.	..	..
2	..	..	..	Valve thickened; not stenosed.	Great stenosis; valve thick, calcareous, with calcareous ulcer.	Decided stenosis; segments confluent and thickened.	Normal.	..	..
3	..	..	..	Valve thickened; segments shortened; margin of aperture rigid; no stenosis; recent granulations on margin.	Admits tip of finger; ulcer with recent granulations.	Segment very thick; moderate stenosis.	Normal.	..	..
4	Dr. Chadwick .	22	F.	Admits two fingers; one small vegetation on margin.	Stenosed (1 in. × ¼ in.), with also recent infective endocarditis.	Slight stenosis from confluence of segments; recent vegetations.	Normal.	No rheumatism.	.
5	Dr. Chadwick (the late)	..	..	Slight stenosis.	Marked stenosis (⅓ in. × ⅙ in); recent granulations on margin.	Moderate stenosis, with also recent granulations.	Normal.	..	..
6	..	..	..	Aperture circular; about ¾ in. in diameter.	Extreme stenosis; calcareous masses in valve.	Moderate stenosis; calcareous masses.	Specimen was not remounted, and pulmonary valve not satisfactorily seen.	..	Heart weighed 14 oz.
7	Dr. Allan . .	70	M.	Stenosed; about ¾ in. in diameter.	Stenosed; if anything, the aperture *slightly* less than tricuspid; calcareous and fissured.	Calcareous; clearly stenosed and incompetent.	Normal.	Syphilis.	..
8	..	..	...	Stenosed 1 in. × ¾ in.; slight recent endocarditis.	Stenosed (⅜ in. × ¼ in.).	Great stenosis; aperture admits goose quill; segments confluent into cone; recent granulation on margins of aperture.	Normal.	..	Little, if any, dilatation of cavities of heart.

No.	Patient under the Care of	Age.	Sex.	Collection of Valves.				Rheumatism, Chorea, etc.	Remarks.
				Tricuspid.	Mitral.	Aortic.	Pulmonary.		
9	Dr. Allbutt. .	14	F.	Stenosed; admits two fingers easily; recent endocarditis on margins; slight congenital deficiency of valve (see text).	Stenosed (¾ in. × ¼ in.)	Valves thickened; one flap partially destroyed; slight stenosis and undoubted incompetence.	Normal.	No rheumatism.	Right auricle and ventricle very much dilated; right ventricle much hypertrophied; left auricle enlarged; left ventricle small as compared with right.
10	Mr. Teale . .	..	..	Slight stenosis.	Great stenosis (¾ in. × ⅛ in.); recent endocarditis, with calcareous ulcer.	Aortic stenosis slight.	Normal.	..	Left auricle very large; left ventricle probably smaller than normal; dilatation of right side of heart, with hypertrophy of ventricle.
11	Mr. Teale . .	..	..	Stenosed; admits two fingers with difficulty.	Stenosis only very slightly more marked than in case of tricuspid; calcareous deposit, with ulceration.	Marked stenosis; valves calcareous.	Normal.	..	Heart generally greatly dilated and hypertrophied.
12	Dr. Allan . .	21	F.	Stenosed; admits the passage of one's thumb.	Much stenosed (¾ in. × ¼ in.); recent endocarditis on margins.	Extremely stenosed; admits passage of small pencil; great thickening; some recent granulations.	Pulmonary valves thick; some recent granulations; pulmonary artery much wider than aorta.	Chorea and rheumatism.	Hypertrophy and dilatation of all the cavities of the heart; recent pericarditis on right auricle and over apex of heart.
13	Dr. Chadwick .	20	F.	Stenosed; admits two fingers with difficulty.	Stenosed (¾ in. × ¼ in.); great calcareous deposit in, and slight ulcer on valve.	Moderate stenosis.	Normal; artery much wider than aorta.	Chorea, three attacks; "growing pains."	Heart weighed 14 oz.
14	Dr. Allbutt. .	..	..	Much stenosed, ½ in. × ¼ in.	Extreme stenosis; very narrow semilunar slit.	Great stenosis, with much thickening of segments, which are united into a cone.	Removed in mounting specimen; condition unknown.	..	..
15	Dr. Barrs . .	50	F.	Slight stenosis.	Stenosed (¾ in. × ¼ in.).	Extreme stenosis; aperture triangular at summit of cone; admits passage of pencil.	Normal.	Rheumatic fever three times.	..

16	..	..	..	Stenosed; admits passage of one's thumb.	Great stenosis (¾ in. × ¼ in.).	Segments very thick, with undoubted stenosis of a slight degree.	Valves thickened.	..	..
17	Dr. Churton .	40	F.	Stenosed; admits passage of thumb.	Great stenosis.	Cusps thickened; orifice very slightly stenosed.	Removed in mounting specimen; condition not known.	No rheumatism or chorea.	..
18	Dr. Churton .	46	F.	Great stenosis; admits point of index finger.	Great stenosis (¾ in. × ⅛ in.).	Moderate stenosis.	Normal.	Rheumatic fever.	Pericardiac effusion, with recent fibrinous exudation on heart; heart, 13½ oz.; great auricular distension on both sides of heart; some ante-mortem clot in right auricle.
19	Dr. Chadwick .	19	F.	Stenosed; admits end of thumb; recent granulations.	Great stenosis, with slit-like aperture.	Segments thick; some fusion at commissures, causing slight stenosis: recent granulations near margins.	Segments rather thickened at margin; doubtful if *competent;* few granulations on segments.	Chorea.	Auricles much dilated; ventricles but slightly so, and hypertrophy slight; pericarditis.
20	Dr. Chadwick .	37	F.	Stenosed; admits the passage of one's thumb; margins thick; recent vegetations.	Extreme stenosis; aperture admits tip of one's little finger.	Stenosed; admits passage of one's little finger; segments much thickened, and cartilaginous in feeling; recent vegetations.	Normal.	Rheumatic fever.	Heart weighed 17 oz.; left and right ventricles hypertrophied, and the latter slightly dilated.
21	Dr. Barrs . .	25	F.	Manifestly incompetent, as well as slightly stenosed.	Great stenosis; admits tip of little finger.	Thickened and rigid; little, if any, confluence of segment, but some stenosis.	Normal; artery much larger than aorta.	No history of rheumatism or of chorea.	Auricles immense; Roughness of pericardium of right auricle especially; left ventricle very thin walled; little, if at all, dilated; right ventricle considerably dilated.
22	Dr. Allan . .	27	F.	Admits passage of one's thumb.	Great stenosis; admits tip of one's little finger.	Normal; no stenosis.	Normal.	..	Patient was imbecile.

B. *Specimens with stenosis.*—Tricuspid stenosis apart from disease of the other valves of the heart is the rarest of all valvular lesions. Bouillaud and Bertin refer to the case of General Williams Wiple, recorded by Corvisart, Leroux, and Boyer, in which the tricuspid valve was ossified, and seems to have formed a diaphragm between the auricle and ventricle which was pierced by two apertures connected by a slit, and by a third which, communicating between the right auricle and the left ventricle, must have been a deficiency in the posterior portion of the pars membranacea septa. Gairdner's remarkable case of *obstruction* of the orifice by a pedunculated mass attached to the auricular wall, is, as he himself says, not an example of tricuspid *contraction*, and it will be pointed out later on that some specimens put on record as illustrating the solitary lesion of tricuspid stenosis have, in my opinion, been too readily accepted.

In the *Pathological Society's Transactions* for 1881, and subsequently in the *Lancet* for the same year, Bedford Fenwick published two important communications on the subject of Tricuspid Stenosis. In the former, he deals with the records of forty-six specimens of the affection seen in the post-mortem room, which include twelve formerly collected from various sources by Hayden and fourteen recorded by Durozier, while, in the latter, specimens mentioned by Norman Moore, Peacock, and Horrocks account for an additional sixteen, and subsequent additions, briefly referred to in the *Pathological Transactions* for 1883, bring the total up to seventy.

When Fenwick was able to quote Niemeyer as saying the affection was "extraordinarily rare," Flint as referring to it as a rare curiosity, and Peacock and Rosenstein as regarding it as practically always congenital, the necessity for such papers in 1881 is apparent, and one welcomes Fenwick's able support of his two main contentions, namely, that stenosis of the tricuspid valve, though the rarest of all lesions to occur alone, is by no means "extraordinarily" rare in association with a similar but more marked condition of the mitral, and that, when it is found in one who has died in adult life, it may be regarded as being in almost every instance not a congenital but an acquired affection.

Although Peacock and Rosenstein regarded tricuspid stenosis as almost invariably congenital in origin, it must be pointed out that Hayden, writing in 1875, and dealing with the series above referred to as included in Fenwick's list, clearly considered the affection an acquired one, for he says—"It is further to be noticed that in the great majority of the cases the mitral lesion has been in excess, *and in point of time manifestly in advance of the tricuspid.*" The italics are my own, but I may say in passing that I do not consider the greater stenosis of the mitral as necessarily carrying with it the inference of an earlier affection.

Balfour, writing in 1876, and giving the details of a case of tricuspid and mitral stenosis, clearly regards the condition as an acquired one, though the sentence beginning "Tricuspid stenosis, when not congenital," written in 1898 in the same connection, would seem to imply a belief on his part that it frequently has this origin. He also refers to a patient in whom he diagnosed the affection during life, but whose subsequent history was not traced, and to Haldane's two cases which are included in Fenwick's list.

In 1888 appeared Leudet's Thesis on Tricuspid Stenosis, to which I shall return later.

Gibson's paper was published in 1893; it adds two cases, is full of interest, and gives references to the early observations of Morgagni, Corvisart, Horn, Burns, and others, though there is no reference to Leudet's Thesis in the otherwise excellent bibliography.[1]

Ashton and Stewart in 1895 deal with seventeen cases, which include Balfour's and Gibson's quoted above, and Philip's, recorded in 1893, to which reference will be made below.

Newton Pitt was able in 1899 to collect no fewer than eighty-seven cases from the post-mortem records of Guy's Hospital, extending over a period of twenty-six years, and representing a total of 12,000 autopsies. Of these, one or two may be included in Fenwick's list.

Leudet, in his Thesis, basing his remarks on the records of 114 post-mortem examinations, out of 117 cases culled from various sources, and including all Fenwick's cases, gives the following figures:—

Stenosis of the tricuspid alone	11
,, ,, tricuspid and of the orifice of the pulmonary artery	3
,, ,, tricuspid, mitral, and pulmonary	1
,, ,, tricuspid, mitral, and aortic	21
,, ,, tricuspid and mitral	78
	114

The fourteen cases in the above table where the narrowing is said to be unassociated with mitral stenosis, are clearly not all of them examples of stenosis of the kind we are considering, for Cases 18 and 68 are instances of obstruction by tumours, probably thrombi, the former being Gairdner's celebrated case; in Cases 1 and 53 the orifice was narrowed by polypoid concretions and fibrinous clot respectively; Case 4 is that of General Wiple referred to above; Landouzy's case (No. 39) had a deficient interventricular septum; Case 62 had a narrowing of the conus arteriosus of the right ventricle, a condition highly suggestive of a congenital origin; in Foster's case (No. 7), though the mitral valve is reported to be normal, its orifice "seemed a little contracted"; while Bertin's case, referred to by Hayden and by Gibson as the only instances of tricuspid stenosis on record without mitral stenosis, seems to have had some peculiar obstructive condition of the pulmonary orifice; and moreover, as will be seen by referring to Bertin's own description, presented an aperture of communication, about two lines in diameter, between the right ventricle and the aorta, clearly a congenital effect. Of the remaining five, in two quoted from Durozier (Nos. 29 and 32), there is no mention of the mitral valve in Leudet's abstract, and this is the only evidence that it was not stenosed, while in case 116, recorded by Leudet himself, there was associated with well-marked tricuspid narrowing, a diseased condition of the aortic valves, and this case, it appears to me, must have got wrongly classified in his table; probably it has gone to swell the class of tricuspid stenosis as a solitary lesion, for without it I can only bring the number up to ten. If, therefore, we omit as doubtful Durozier's two cases, there remain only two cases, one by Torres Homen (No. 102), and one by Leudet (No. 117), where there was stenosis apparently of the kind we are discussing, independently of any affection of the other valves. Leudet's case presented old-standing tricuspid stenosis without mitral involvement, but with recent infective tricuspid endocarditis of puerperal origin.

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[1] Since writing the above, my attention has been called to the chapter on Tricuspid Stenosis in Gibson's "Diseases of the Heart and Aorta," 1898. In this he refers to the Thesis of Leudet; gives four additional cases, two of which have the results of the autopsy added, and refers to Herrick's paper of 1897.

This examination of Leudet's tabulated statement of cases is important, in view of its acceptance without criticism by Ashton and Stewart,[1] though I observe that Newton Pitt has also taken exception to it.

To these very exceptional specimens we must add Philip's case, where there was a recent mass of vegetations on the tricuspid valve *which was moderately stenosed from former disease,* and where the other valves were unaffected, and two cases recorded by Newton Pitt where there was no stenosis of the mitral (nor, I presume, of the other valves), though in only one of them were the valves said to be healthy, being described as thickened in the other. Practically, therefore, tricuspid stenosis, in all but very young patients, where it may have a congenital origin, is, when present, always associated with stenosis of the mitral valve.

As I have already said, Fenwick's arguments carry conviction to my mind as to the acquired character of the tricuspid lesion. Its markedly greater prevalence in females, while congenital affections are at least as common in males, the fact that the age of the youngest patient who died was seventeen years, though Pitt records a death at ten, the comparative frequency of a rheumatic history, the absence of symptoms of any cardiac affection in early life, and finally its association with other valvular changes that are commonly regarded as inflammatory in origin, all seem to me to set the matter at rest.

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[1] It is clear also that Ashton and Stewart must have overlooked Case 116, above referred to, as not appearing in its proper place in Leudet's table, or they would not have written, "Tricuspid stenosis is never associated with aortic disease unless there also exists mitral stenosis."

The series of nineteen cases which I have tabulated above shows that no fewer than eleven presented signs of recent endocarditis, the pulmonary valve being affected twice, the aortic seven times, and the mitral four times, while the fact that the tricuspid itself was also affected six times, is an additional argument in favour of inflammation having played an important part in causing the stenosis; and when due regard is paid to the normally greater calibre of the tricuspid orifice as compared with the mitral, and to the greater delicacy of its structure, an examination of the specimens will show that the pathological changes leading to the stenosis in the two cases are identical, for the condition of the valves is essentially the same.

Of course the stenosis of the tricuspid valve may have been due to an inflammation which attacked it at the same time as that which led to the condition of the mitral. The almost invariably greater stenosis of the mitral is not, in my opinion, a safe guarantee that this valve has been the first to be affected, for, as just mentioned, its orifice is normally narrower; still, when we consider that tricuspid stenosis hardly ever occurs apart from mitral stenosis, while cases of isolated stenosis of the mitral are quite common, the inference is very strong that the narrowing of the tricuspid valve is usually secondary.

In this connection the condition of the pulmonary valve is of interest. Of the sixteen cases in which this could be ascertained, they were healthy in thirteen and thickened in three; two of these, above referred to, had recent granulations, and in Case 19, which was one of the two, I incline to think the orifice was imperfectly guarded by the segments, and that regurgitation was probably present during life. Pitt's figures give nine instances of thickening of the pulmonary valve in his eighty-seven cases, and he comments on the rarity of this condition in cases of "extreme mitral stenosis in which a similar defect is ultimately set up in the tricuspid valve," and this appears to me to be an additional argument in favour of endocarditis, which, of course, has a special predilection for the auriculo-ventricular valves, playing an important part in leading to the tricuspid lesion; for if it were a mere matter of back pressure, one might expect the pulmonary valve to be oftener affected, situated as it is between the anvil of the narrow mitral orifice and the hammer of the usually, though not invariably, hypertrophied right ventricle.

Fenwick's analysis of his first forty-six cases shows that the aortic valves were affected in twenty-six, stenosis being present in twelve. In the eighty-seven cases analysed by Pitt, the aortic valves were variously affected in seventy, and the number in which stenosis was noted is given as twenty-four.

As contrasted with these figures, my series show that, in every instance except one, there was some degree of narrowing of the aortic aperture. I can only say that each specimen was subjected to a careful examination as to this point, and while in some cases the stenosis was obvious or extreme, and in others it was very slight, amounting merely to a little confluence of the segments at their commissures, in every case except the one mentioned there was *some* diminution of the sectional area of the aperture.

In Fenwick's statistics the aortic valves are recorded as thickened and incompetent in fourteen, while in Pitt's they are described as thickened in twenty-five and incompetent in twenty-three. As, however, these two sets of statistics are based mainly on documentary evidence, I incline to think that a special examination of the aortic valves would have led to a larger number being found to present stenosis.

I may say that my figures were, in this respect, a surprise to myself. Perhaps the reason for this may be, that in reference to another class of cases, namely, the aortic incompetency which occurs in older people, and mainly in men, from atheromatous changes, I hold the opinion very strongly that the presence of a see-saw bruit often leads to an inaccurate diagnosis of aortic *stenosis* or *obstruction*, as well as regurgitation, whereas in many of such cases, probably the majority, the sectional area of the aperture is larger than in health.

The difference in the incidence of the disease in the two sexes raises some important considerations. Of Fenwick's seventy tabulated cases, sixty-two occurred in females, eight in males. I regret that the sex in so many of the cases in my list could not be ascertained, but of the twelve in which the sex was known, all occurred in females except one. Leudet's complete series shows this greater liability on the part of females, but not to the same extent, the ratio being, in the 108 cases, in which the sex was known, as 86 to 22. Of the nine cases, however, to which I have taken exception above as not falling within the category of true tricuspid stenosis, six were men and three women; and if these cases are disregarded the ratio works out as 80 to 19. Leudet's list, however, includes Fenwick's, and if we deduct the latter, the remainder of Leudet's cases show only eighteen women to twelve men, a much smaller excess of females. In Newton Pitt's eighty-seven cases the numbers are fifty-four females, thirty males, and three where the sex was unknown.

Fenwick, greatly struck, as well he might be, by the marked excess in his list of females over males, and holding the view, which we have already briefly referred to, that the tricuspid affection is secondary to a stenosis of the mitral valve, refers to figures from the London Hospital, which go to show that cardiac disease is more common in males than in females, and in that way finds himself driven to the conclusion that mitral stenosis is more likely to be followed by a similar condition of the tricuspid in the female than in the male. For this he finds an explanation in the usually more laborious occupation of males, which leads to a greater amount of back pressure, and this, he thinks, keeps the inflamed margins of the tricuspid valve apart, so that they do not adhere, and therefore stenosis does not result.

Now, in the above reasoning, there appear to me to be some sources of fallacy. In the first place, the figures quoted above show that the discrepancy between the incidence of tricuspid stenosis in the two sexes is not so great as a consideration of Fenwick's statistics or my own would indicate. Then, though cardiac disease may be as common or commoner in males than in females, I cannot think any one will doubt that rheumatic and choreic endocarditis is much commoner in females, while valvular disease, due to atheroma and increased arterial tension, occurs mostly in males, and that it is the former condition which concerns us mostly in reference to tricuspid and mitral stenosis. In an ordinary out-patient clinique, cases of mitral stenosis in females outnumber those in males very markedly, certainly, in my opinion, to as great a degree as Newton Pitt's figures indicate, that, in regard to tricuspid stenosis, females exceed males.

I can, however, quite think that the less laborious occupation of women may, in the condition of inflamed auriculo-ventricular valves, determine a higher percentage in them than in men of cases which go on to stenosis of the orifice, and this, in my opinion, applies not only to the right but to the left side of the heart; and I should be the more ready to accept Dr. Fenwick's ingenious view about the margins of the valves being usually held apart, and saved from mutual adhesions in the case of men with their more laborious occupations, if I held the commonly accepted view as to this being the usual cause of stenosis of the auriculo-ventricular valves, but I do not.

The mitral and tricuspid valves consist not merely of flaps, but each of an undivided curtain, passing all the way round, decidedly deeper in the case of the former than the latter, pendent from which and continuous with it are three flaps in the case of the tricuspid and two in that of the mitral. I hold that in the great majority of cases the stenosis of one or the other of these orifices is due, not to adhesions between the adjacent margins of the valve segments, as often happens in the arterial semilunars, but to a change in which the greater part or the whole of this valvular curtain participates, as well as the segments. In cases of endocarditis, the products of inflammation are most abundant at the free margin of the valve, and here the most extensive and the most powerful shrinking will take place; this, which is tantamount to tightening the neck of a bag by drawing on the encircling string, will result in narrowing of the orifice, and a stretching of the curtain will occur, which will increase the distance between its attached and its free margin, while the disappearance of the segments, that is to say, of their free portions, which are really very short, is accounted for by their being taken up and absorbed into the undivided curtain. The tendency of all long-standing and especially extensive inflammation of the auriculo-ventricular valves is towards stenosis, mainly, I believe, in virtue of the presence of this continuous portion of the valve; and this contrasts with the result of chronic inflammatory changes in the aortic segments, which are normally not confluent with one another, and where each segment may shrink independently, and, especially in non-rheumatic cases, without becoming adherent to its neighbours, and indeed, as often happens, with an actual increase in the sectional area of the orifice. Returning to the auriculo-ventricular valves, dilatation of the corresponding side of the heart, which is more common on the right side than on the left, will be antagonistic to the occurrence of stenosis, and I am free to admit that the more laborious occupations of men will, in this way, but not, I think, by guarding against adhesions, lead in them to a greater proportion than in women, of examples of valves incompetent from shrinking of the segments and curtains rather than stenosed.

It is not my intention to enter fully into any details as to the clinical features of tricuspid stenosis. In the great majority of the cases published no diagnosis appears to have been made, and this, I think, has been due, in many cases, to the question not arising during life. Since my attention has been directed to the subject, I have made a diagnosis twice, if not three times, which has been verified on the post-mortem table.

I consider that the main observations which should lead to a diagnosis of tricuspid stenosis are the following:—

(*a*) The presence in a case of mitral stenosis of a presystolic bruit, audible not only at the apex but towards the lower part of the sternum, especially if, as Haldane pointed out, there should be two points of maximum intensity, one at the apex and the other in the tricuspid area.

(*b*) The development of such a bruit in a patient who hitherto has presented the ordinary bruit of mitral stenosis.

(*c*) Marked extension of cardiac dulness to the right of the sternum, indicating right auricular enlargement, without much epigastric pulsation or other signs of considerable right ventricular enlargement. This might especially be expected in instances of great tricuspid stenosis, with little or no regurgitation; but the existence of great right ventricular enlargement must not be accepted as strong evidence against tricuspid narrowing.

(*d*) Marked fulness of the veins of the neck *without much pulsation in them* will strengthen our suspicions; here again the less the pulsation is in such distended veins the narrower may we assume the tricuspid orifice to be, for the auricle will be less relieved by its contraction, and there will be less regurgitation during the succeeding ventricular systole.

(*e*) The supervention of dropsy and albuminuria in a patient suffering from apparently simple mitral stenosis. This may arouse our suspicions, for these affections are not common unless there is considerable regurgitation associated with the stenosis, but it should not do more than this, for dropsy and albuminuria may result from right-sided failure in mitral narrowing without tricuspid stenosis.

PEDUNCULATED THROMBUS IN THE RIGHT AURICLE.

In the course of this paper I have had occasion to refer more than once to Gairdner's most interesting case of obstruction of the tricuspid orifice by a pedunculated tumour, and as one of the specimens in our museum presents a striking resemblance to his, I will give a brief description of it, though this may not be strictly relevant in a paper dealing with affections of the tricuspid valve.

The patient was an old man of 87, who was admitted in 1891 under the care of Mr. Edward Atkinson. He was suffering from prostatic enlargement, with retention of urine, and his general condition was one of extreme asthenia. No special cardiac signs were noted during life, and he died at the end of eight days, no operation having been thought advisable.

The post-mortem was performed by the late Dr. Jacob, and the specimen was placed in the museum by him, but, as far as I know, no description of it has been put in print. The kidneys were described in the report as having adherent capsules, and as being of the large granular type.

Examination of the specimen showed the following points, most of which are well seen in the two photographs, for which I am indebted to Mr. Michael Teale. The heart was somewhat enlarged, and presented slight senile changes, but apparently there had been no incompetency of the valves, and, especially, I noted the absence of tricuspid or mitral narrowing. The right auricle was much larger than the left, and contained a large solid mass of rounded outline, very hard and firm, at parts nodulated, at other parts smooth, and everywhere presenting an unbroken surface. In shape it strongly resembled an apple, having a wider end directed upwards and backwards, and showing a slight depression where the pedicle was attached, and a narrower end directed towards the auriculo-ventricular aperture. The circumference at its widest part was 6½ in., and when measured on its cut surface from the attachment of the pedicle to the opposite end, its length was 2¼ in. It must have occupied the greater part of the right auricle, from which it seemed to have taken its shape. The pedicle, which was about the thickness of an ordinary lead pencil, was attached to the posterior auricular wall, quite close to the inter-auricular septum, and 1⅓ in. above the orifice of the coronary sinus, and here the auricle presented, when viewed from the exterior, a marked dimple, caused by the drag at its attachment. No indication of Eustachian valve or of annulus ovalis was made out, but the pedicle was attached just above and behind the rudimentary fossa ovalis, the only evidence of whose existence was a cribriform appearance of the endocardial lining of the right auricle. About 1 in. above the attachment of the pedicle was a small rough area on the auricular wall, caused doubtless by friction with the tumour.

In Dr. Jacob's notes the tumour is described as presenting on section the appearance of a clot partly red and partly white, with no tendency to breaking down. I am indebted to Dr. Cairns Forsyth, our pathological curator, for a description of the structure of portions removed from the periphery, and from the mass where it arose from the pedicle. According to this, it consisted of blood clot in different stages of organisation. In some parts the structure was of the "blood sponge" type, consisting of a delicate fibrinous meshwork, with unaltered blood in the interstices; in other parts the clot was composed of fibrinous lamellæ. Pigment granules were seen throughout the mass. There were no distinct vessels, but here and there spaces, with rudimentary walls lined with endothelium, could be made out, which were evidently blood sinuses. Organisation was most advanced at the surface of the tumour. The base of the pedicle was composed of delicate fibrous tissue, with numerous blood vessels and sinuses. At the junction of the pedicle with the clot there was a narrow layer of fibrin, deeply pigmented, and arranged at right angles to the long axis of the pedicle. The clot in the neighbourhood of the pedicle was of the "blood sponge" type.

I do not intend to speculate on the possible effects of this pedunculated thrombus. The wonder grows, on inspection of the mass, that the circulation could have gone on at all. It was too large to get engaged in the auriculo-ventricular orifice; and though it might have acted, as Gairdner considers his did, as a ball valve, during the ventricular diastole, there was no evidence that this was actually the case. If one accepts the three characteristics laid down by Welch, which must be presented by a thrombus before it can be considered entitled to the designation of a "ball thrombus," this specimen, as well as Sir William Gairdner's, would be excluded by the first condition, namely, that it should have an entire absence of attachment, and should consequently enjoy free mobility.

REFERENCES.

1. Ashton and Stewart.—*Am. Journ. Med. Sc.*, Phila., 1895.
2. Balfour.—"Diseases of the Heart and Aorta," 1876 and 1898.
3. Bernays and Luschka, quoted by Dreschfeld, Allbutt's "System of

Medicine," vol. v. p. 867. 4. Bertin.—"Traité des maladies du cœur," 1824. 5. Bouillaud. — "Maladies du cœur," 1824, tome ii. p. 272. 6. Darier.—*Arch. de physiol. norm. et path.*, Paris, July and August 1888. 7. Bedford Fenwick.—*Trans. Path. Soc. London*, 1881, 1882, and 1883; *Lancet*, London, 1881. 8. Gairdner.—*Edin. Hosp. Rep.*, 1893, with former references to same case. 9. Gibson.—*Ibid.* 10. Hayden.—"Diseases of the Heart and Aorta," 1875. 11. T. Wilkinson King.—*Guy's Hosp. Rep.*, London, 1837, with the references to Harvey, Hunter, and Adams, quoted in the text. 12. Leudet.—"Essai sur rétrécissement tricuspidien," Paris, 1888. 13. Ludwig, Macalister, and Hesse, quoted by Allbutt, "System of Medicine," vol. v. p. 507. 14. Philip, *Edin. Hosp. Rep.*, 1893. 15. Newton Pitt.—Allbutt's "System of Medicine," vol. vi. 16. Welch. —*Ibid.*, p. 186.

A CONTRIBUTION TO THE STUDY OF THE POST-MORTEM APPEARANCES IN THE DROWNED.

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(Plates VII.-XII.)

Owing to the proximity of Edinburgh to the sea, and also to the circumstance that there is a fresh-water canal and several small lakes within the city boundaries, frequent opportunities are afforded of examining the bodies of persons who have been drowned in salt and in fresh water.

In the literature dealing with the subject of drowning, I have been unable to find any special reference to the effects of immersion in salt water. The classical descriptions of Devergie, Orfila, Casper, Taylor, and many other older writers, of the appearances in death by drowning, and of the subsequent changes undergone by bodies immersed in water for various periods of time, are based, almost exclusively, upon the material which such rivers as the Seine or inland lakes have supplied.

The descriptions in modern works on forensic medicine, such as those of Hoffmann, Brouardel, Strassmann, and Dixon Mann, are also confined apparently to the conditions commonly seen in cases of drowning in fresh water.

I do not desire to suggest by this that there is any distinction between drowning in fresh and in salt water, so far as regards the diagnostic signs of drowning: these, naturally, must be the same, no matter what the fluid is.

A comparison, however, of the bodies which have been immersed in the sea, and in fresh water, for some time, has led me to the conclusion that the changes which bodies undergo as a result of lying in water of these respective characters frequently show marked and important differences. For this reason, and also because certain of the cases present special points of interest, I venture to give the following account of the post-mortem appearances in some of the bodies which have been recently found in salt water. The records of these cases have an additional value from the fact that, in every instance, with one exception, the exact period of immersion was determined on reliable and satisfactory evidence, so that they may fairly serve as data for contrasting the effects of putrefaction after varying intervals of time.

The first four cases refer to bodies which were found in sea water: one in the open sea, and the other three in an old quarry to which the sea has free access, and which appears to be a favourite locality for suicide. The two subsequent cases (5 and 6) occurred in the canal, that is, in fresh water, and are given for comparison, and because they present some features of interest.

One of the most striking appearances presented by bodies which are found in the sea is the rapidity with which the soft parts on exposed portions of the body, such as the head, etc., may be destroyed. At the same time, the body, as a whole, shows a much slower progress of the putrefactive changes than that found in the bodies of persons drowned in fresh water. The destruction of the flesh on the head, hands, and feet (if the latter are not covered), is not due, as a rule, to putrefaction; although no doubt it may, to some extent, be assisted by decomposition producing a softening of the tissues. It arises from the action of fishes, and more particularly of crabs, attacking and devouring the flesh. To a certain extent, also, the detritive action produced by waves, causing the body to be moved to and fro against rocks, or on a stony sea bottom, may tend to the same result. There is no doubt, however, that the chief cause is due to fish attacking the body: the nature of the injuries produced—their frequently circumscribed character, and the appearance of the edges of the parts affected—indicate this mode of causation. In further proof, however, of this point, I will relate a somewhat weird experience which happened to me lately.

The body of a sailor was found in the sea; it was fully clothed, and appeared to be in a comparatively fresh condition, with the exception of the head and hands. which were practically devoid of flesh. After examining these parts so far as I was able, owing to the body lying in its coffin, clothed in the condition in which it was removed from the water, the coffin lid was replaced. On the following day, being anxious to show the body to my students, I again removed the lid, when, to our horror, from beneath the covering pall a large black crab marched out.

It is astonishing within how short a time the disappearance of such exposed parts may take place. I have seen the whole of the bones of the head, face, hands, and feet picked as clean as anatomical specimens, within ten days of death; whereas the rest of the body, which was covered with clothes, was intact, and showed

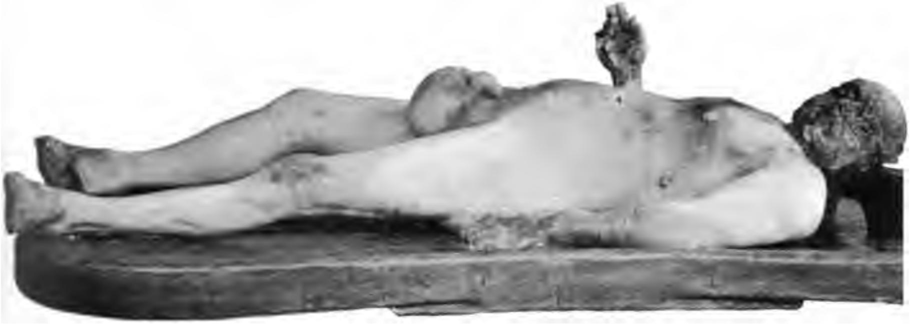

Fig. 1.—Body recovered from the sea after four weeks' immersion.

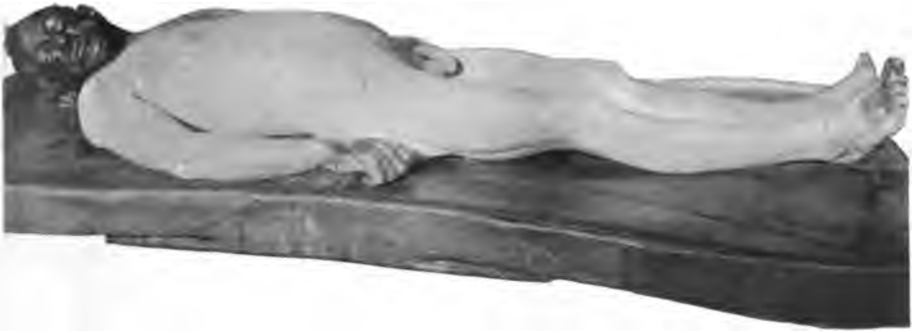

Fig. 2.—Case of drowning in fresh water. Body recovered fifteen days afterwards.

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scarcely the slightest trace of decomposition externally. The ears, nose, and forehead, together with the eyes, are, as a rule, the first parts to disappear; while the wrists and backs of the hands are also attacked before the palmar aspects—no doubt, on account of the greater toughness of the cuticle in this latter position.

There can be little question as to the slower progress of putrefaction in salt as compared with fresh water. This may be explained by the greater purity of the water as a rule, and also by the slightly antiseptic action of salt water. Possibly there are also conditions present which are more conducive to the formation of adipocere than in fresh water.

A third respect in which bodies recovered from the sea differ, in the majority of cases, from those of persons drowned in fresh water, is to be found in the greater frequency of injuries upon them. This is only to be expected, since, although injuries do occur in bodies lying in fresh water from a variety of causes, yet they are the exception, apart from cases of drowning occurring in rapid rivers or places where there is considerable boat traffic. On the other hand, bodies recovered from the sea, more especially near the shore, very often present injuries consisting sometimes merely of abrasions and bruises, at other times of extensive lacerations and fractures. In connection with such superficial abrasions of undoubted post-mortem origin, considerable difficulty may be experienced in deciding the question of ante- or post-mortem infliction, owing to their presenting at first a light red colour or florid appearance, very similar to excoriations caused during life. This is a result, no doubt, due to the salt water. A similar reason may also account for the great frequency with which the skin of the face and other parts of the body, in those drowned in sea water, present a bright red or pink coloration.

CASE 1.—*Body recovered after five months' immersion in sea water.—Peculiar formation of crystals in internal organs.*—On 25th May the body of a man was found in Granton Quarry. It was identified by means of certain cards in his pockets, and also by a ring on his finger, as that of a man who had disappeared upon the 23rd of December previous. He had been of intemperate habits, and, before his disappearance, was in a depressed state of mind. From these and other circumstances, there can be little doubt that he committed suicide on or about the day of his disappearance. The quarry referred to is an old disused one, abutting on the sea, and filled with sea water, which has free access to it at high tide. The body was noticed early on the morning of 25th May, lying stranded on the sloping edge of the quarry, partly covered with water.

The body was examined and photographed upon the 26th May. It was completely clothed in thick underclothing, a tweed suit, overcoat, boots, and gloves (Plate IX., Fig. 1).

The body presented the very striking picture seen in the above photograph. The cranium was bare in front, and polished; posteriorly, it was covered with scalp, which was, however, loose, and transformed into a white adipocerous substance, to the external surface of which a few hairs were still attached; the cranium was uninjured, and the bones were firm and not brittle.

The face presented the appearance shown in Plate X., Fig. 1. The soft parts had all disappeared from it, leaving the bones perfectly bare and clean, with the exception of the orbits and cheeks, which were covered with white adipocere. The external ears were absent, with the exception of small portions of cartilage. On cutting open the clothes, the rest of the body presented a remarkably fresh appearance (Plate IX., Fig. 2). The skin of the trunk and limbs had a pale greenish tint, and was everywhere intact, with the exception of a small area over the shin of the left leg, where it was destroyed down to the bone and muscles. In this situation there was also a hole in the underclothing, which had the appearance of having been eaten away by crabs or fish. There was no putrefactive emphysema.

The scrotum was not distended, but the penis was soft and undergoing decomposition. The cuticle over the greater part of the body was easily detached. The abdomen was somewhat distended. On removing the glove from the right hand in order to obtain possession of his ring, the whole of the soft parts, together with one or two of the phalanges, came away in the glove. This accounts for the appearance seen in the photograph. The glove of the left hand was split at the seams; but the soft parts within it, although macerated and easily broken down, were intact. On removing the boots, the feet were found quite intact and normal, except that the cuticle was bleached and sodden, and easily detachable *en masse* (Plate XII., Fig. 2) from the ankles downwards.

Internal examination.—On piercing the abdominal wall, a considerable quantity of gas escaped, which was non-inflammable, and extinguished a light held in it. A quantity of similar gas was also present in the pleural cavities. The odour given out by the body, previously slight, was now strong, although not particularly offensive. The general tissues of the body, except the subcutaneous fat, were uniformly red in colour, from imbibition and transudation of blood-colouring matter. The lungs were collapsed, and floated in about a pint of blood-stained fluid contained in each pleural cavity: they were soft, and greenish in colour on the surface. Both presented the following very remarkable appearance, namely, a deposit on the pleura of numerous clear crystals, ranging in size from a millet seed to a cherry stone (Plate XI., Fig. 1). These crystals were well formed, and firmly adherent to the pleura. The costal pleura, as also that covering the diaphragm and the pericardium, was likewise thickly encrusted with similar crystals (Plate XI., Fig. 2), and presented an appearance which reminded one of the deposition of crystals from a saturated solution of a salt. The substance of the lungs was breaking down; and in it similar crystals were found on section, although of comparatively small size. The heart was collapsed and empty; the endocardium was deeply stained, of a reddish colour, but the organ showed no other signs of decomposition. In the abdomen, all the organs were remarkably fresh in appearance. The stomach was light green in colour, except the posterior wall, which was blackish brown; it was, however, in as good preservation as is frequently seen in bodies which have only been dead for a few days. It contained a little watery fluid and a considerable number of crystals similar to those referred to above; only, the majority were of a larger size, and they were but loosely, if at all, attached to the mucous membrane. The intestines had a fresh and normal appearance. The jejunum contained a number of crystals, and some thick, slimy, blood-stained fluid. The liver was slightly green on the surface, but otherwise was well preserved, as also were the other organs of the abdomen. There was no fluid in the peritoneal cavity. On cutting into the flesh of the thighs, it appeared to be undergoing transformation into adipocere.

The crystalline formation in this case must be one of great rarity. I have so far been unable to find an account of the occurrence of a similar condition in any of the works upon forensic medicine which I have had an opportunity of consulting. My friend, Professor Strassmann of Berlin, to whom I wrote on the subject, very kindly gave me references relating to the deposition of phosphates on organs in cases of advanced decomposition,[1] but the crystals in my case are evidently of a totally different character. Another reference[2] I have been unable to consult. I remember seeing a preparation of a crystalline deposit upon an organ in Hofmann's museum at Vienna, but this, I think, was of the same nature as that referred to by Strassmann, and was in no way similar to the condition under discussion. An analysis of the crystals, kindly made by Dr. Noel Paton, showed them to consist mainly of calcium phosphate. They are therefore insoluble in water, as indeed was indicated by the fact of most of them being immersed in the watery fluid contained in the pleural cavities. I regret that I did not preserve and analyse some of this fluid, and that an illness, accompanied with acute suppuration of the middle ear—the result, I believe, of the post-mortem examination—prevented me from preserving much of the material removed from the body. I must confess to having considerable difficulty in explaining the origin of the crystals. At first I was inclined to believe that they were closely connected with the *locus* in which the body was found. This was an old disused quarry into which the sea had broken, as already detailed. It therefore contains salt water, but, in addition, in all probability there are certain springs discharging into it, as in most quarries, and these springs are almost certainly highly charged with salts. Against a theory of the water in the quarry exerting any special influence, is, however, the fact that the body in Case 4 was also found in the same place, and must have been dead for at least as long a period as the one in question; while another point is, that the crystals were all formed in the body, and not anywhere upon its surface. These considerations lead to the conclusion that at least one of the constituents of the crystals had its source in the body, and I am therefore inclined to think that their formation was due to the soluble phosphates of the tissues combining with the calcium present in the sea water. It is well known that in very dilute solutions even the most insoluble salts may crystallise out in process of time, and that frequently such crystals may be of large size.

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[1] Maschke, "Handbuch," Bd. iii. S. 408; Strassmann, "Lehrbuch," S. 568; Israel, "Pract. der Path. Hist.," Auf. 2, S. 106.

[2] Gabriel Corin, *Ann. Soc. de méd. legal Belgique.*

In the present instance the size of many of the crystals was remarkable—a fact pointing to their slow formation.

An interesting question arises, namely, whether such crystals do not form more frequently than may be supposed in cases of drowning in salt water. The fact of their not having been previously observed may be due to bodies not being dissected, as a rule, when in an advanced stage of decomposition, or possibly owing to the crystals having disappeared, after their formation, from the production of acids as a result of progressive putrefaction and chemical changes. Even a very weak acid solution would quickly cause crystals of calcium phosphate to dissolve.

The photographs (Plate XI., Figs. 1 and 2) were taken several weeks after the post-mortem examination was made, and after the portion of lung and diaphragm had been prepared for permanent preservation in formalin; so that, to some extent, the original clearness and sharp definition of the crystals have been lost.

CASE 2.—*Body recovered after one month's immersion in sea water.*—A man, æt. 57, disappeared on the 13th of May, and his body was found floating in the same quarry as in the last case, on the 17th of June: it was identified by relatives, and the circumstances all pointed to the case being one of suicide, committed on the day of his disappearance.

The body was fully clothed, and the pockets were filled with large stones, notwithstanding which it was found floating, as above described.

The face was much decomposed, and unrecognisable owing to the nose and upper lip being partially destroyed (Plate VII., Fig. 1); the other soft parts of the face were of a dark brownish green colour, soft and slimy, but the skin was present, although the cuticle had disappeared; the eyes were unrecognisable; the scalp was intact, greenish in colour, and devoid of hair, except behind the ears and below the occiput, thus giving the appearance of being bald, although not so in life. The ears had disappeared, with the exception of small portions of the cartilages; the neck was swollen, and the skin green and soft. On cutting away the clothes, the shoulders, chest, and abdomen were found to be distended by putrefactive gases. The scrotum and penis were enormously distended, but the skin here showed no green discoloration; the limbs were also somewhat swollen from putrefaction. The skin, generally, over the body had a greenish tint, but this was nowhere deep. The subcutaneous blood vessels gave a marbled appearance, more especially to the arms and shoulders. The cuticle everywhere was intact, but was easily detachable. The hair on chest and pubis was present and firm. There was well-marked goose-skin on the front of the thighs. The hands were bleached, and the cuticle becoming detached in a glove-like form, while the dorsal aspects and wrists had apparently been attacked by fish or other animals, as the skin was here eaten away in parts, exposing the subcutaneous tissues. Two fingers of the right hand had also disappeared. No internal examination was made in this case.

CASE 3.—*Body recovered after fifteen days' immersion in the sea.*—A man, æt. 25, fell overboard from a pleasure steamer into the sea. On 6th July, fifteen days afterwards, the body was found floating on the surface, at a considerable distance from the shore. The body was fully clothed, and presented a very striking appearance, inasmuch as nearly the whole of the soft parts of the head had disappeared (Plate VIII., Fig. 2), while, at first sight, the rest of the body appeared to be little altered. The skull was perfectly bare, except for some portions of loose scalp behind the ears and occiput, to which some dark hair was still attached. The bones of the face were exposed, and the orbits empty, the only soft parts remaining being portions of the cheeks, which were detached and loose owing to advanced putrefaction of the subcutaneous structures. The teeth were loose, and some had fallen out. The ears were absent, only remains of the cartilages being left. The tongue was loose, and fairly well preserved, except on the left side, where it had the appearance of having been eaten away. The neck was swollen with putrefactive emphysema, and had as lightly greenish hue. The skin of the trunk was fresh and natural in appearance; there was well-marked gooseskin on the chest and limbs. The scrotum was contracted, but the body, as a whole, was quite flaccid. The cuticle of the hands was bleached, sodden, and becoming detached. On the dorsal aspects of both wrists the skin was destroyed (Plate VIII., Fig. 1), exposing the subjacent structures. The cuticle of the feet was bleached, but intact and firmly adherent. No *internal* examination could be made in this case.

The appearances presented by the bodies in the two preceding cases are interesting, especially when contrasted with those recorded in connection with Cases 5 and 6, which relate to bodies recovered from fresh water after exactly similar periods of immersion. The outstanding difference between them is, that while, in the latter two, the faces, heads, and hands (in other words, the exposed parts of the bodies) were everywhere intact,—in the two former bodies, recovered from the sea, these parts had been partially destroyed, and, of the ears in both, only small portions of the cartilages remained. Nothing, in my opinion, could represent more typically the difference which, I believe, usually characterises bodies which have lain in salt and fresh water respectively.

CASE 4.—*Body of a man recovered in sea water: time of immersion unknown.*—This body was found in the month of May in the quarry already referred to, and was never identified. It presented a most peculiar appearance, inasmuch as the skin and subcutaneous tissues, down to the muscles, had disappeared from the whole of the body. The cranium was quite bare; the soft parts of the face were present, but merely as a mass of decomposing flesh of a dark brownish green colour; the ribs were exposed, together with the intercostal muscles, as in a carefully dissected body; while the anterior coverings of the abdomen had all disappeared, down to the tendinous aponeurosis. The thoracic and abdominal cavities were, however, intact. In many places the bones of the arms were bare, while the hands had the appearance shown in Plate X., Fig. 2; the palmar aspects were still practically intact and covered with cuticle, which could be detached entire in the form of a glove. Both feet were absent, and both legs below the knee were denuded of flesh, nothing but the bare tibiæ and fibulæ remaining. The scrotum and penis were unrecognisable. What appeared to be a piece of loose rectus muscle lay close to the umbilicus; but on closer examination it proved to be a coil of small intestine protruding through a firm fibrous ring at the umbilicus, which tightly constricted the protruding bowel. On opening into the abdomen, all the organs were found to be in a remarkably fresh condition, and of practically normal colour, except the liver, which was soft and green. The stomach and intestines were collapsed, and they appeared to be adherent to each other, as well as to the liver and other organs, in various places. This appearance suggested the previous existence of a peritonitis; but it was impossible to decide this point definitely, under the circumstances. The stomach was empty. The whole appearance of the abdominal organs was in marked contrast to the external condition of the body. The heart was distended with gas, and contained some thick fluid blood. The lungs were becoming green, and distended by putrefactive emphysema.

This case is chiefly interesting on account of the universal manner in which the superficial coverings of the body, *i.e.* the skin and subcutaneous tissues, had been removed from the trunk and greater portion of the limbs, leaving only the muscles and deep fasciæ. This result was in all probability produced by fish. The presence of the umbilical hernia is also noteworthy, and might have served as a valuable aid to the identification of the body. I thought at first that the loop of bowel might possibly have been extracted from the abdomen through a hole made by crabs in its wall, but the constricting ring was too tight to lend countenance to such a suggestion, while the fact that the protruding coil of intestine showed no trace of injury was also against such a theory.

CASE 5.—*Body recovered from canal after one month's immersion.*—The body was that of a middle-aged man, found floating on the surface on the 4th February. It was identified as that of a person who disappeared on 31st December previous. The body was well nourished and fully clothed; face was dark green in colour, and greatly swollen from putrefactive emphysema, as were also the head and neck. There was no froth at the mouth or nose; the hair on the face and head was loose, and had already partially disappeared. On the vertex there was a lacerated wound 2 in. long, and triangular in shape. The tissues immediately around this wound were uniformly red in colour from transudation of blood-colouring matter, and it was impossible to say whether the wound was ante- or post-mortem. On removing the clothes there was a slight green discoloration of the lower part of the abdomen, but otherwise the body was quite fresh-looking. The abdomen was somewhat distended. There was no hypostatic lividity, the skin being everywhere blanched. The limbs were rigid; no goose-skin; nipples retracted. The penis was very markedly retracted, so that I thought at first that it had been amputated close to its base; the scrotum also was greatly retracted and empty, no testicles being contained in it. On closer examination, there appeared to be a bubo in each inguinal region, but these turned out to be the testicles, which had been retracted up into the inguinal canal. This was evidently a result of post-mortem contraction, as it was found easy to draw them down again into the scrotum, and to reproduce the normal condition. The penis also could be drawn out, and was then of normal size. There was some fluid at the end of the urethra, and this, on microscopical examination, proved to be semen, containing abundant spermatozoa. On puncturing the abdomen, a quantity of gas escaped, which burned brightly with a blue flame for nearly a minute. The pericardial sac contained a small quantity of blood-stained fluid. The right side of the heart was soft and flabby, and contained a quantity of dark frothy blood; the left ventricle was firmly contracted, and in it there was a small quantity of similar blood. The lungs showed no sign of decomposition; they were distended, and on section were of a uniformly red colour; the blood vessels were engorged with frothy blood. There was a small quantity of blood-stained fluid in each pleural cavity. There was no froth in the air passages; but small particles of weeds were found adhering to the mucous membrane of the trachea and bronchi, which was of a deep red colour. The stomach contained about an ounce of fluid. The abdominal organs showed no trace of decomposition. The membranes of the brain were engorged with blood, the brain itself being soft, and commencing to show a greenish discoloration on the surface.

Case 6.—*Body recovered from canal after fifteen days' immersion.*—A man committed suicide in October by drowning himself in the canal, where his body was recovered fifteen days afterwards. He was completely clothed. The whole face was greatly swollen, and the skin of the head, face, and upper part of the back was dark greenish brown in colour (Plate VII., Fig. 2), and breaking down into a soft putrescent condition. The hair of the head and moustache was firmly attached. There was a slight greenish discoloration at the upper part of the sternum; but below this the skin was quite normal in appearance, and of a rosy hue, giving the body a very life-like appearance. The cuticle everywhere was firm and intact, that on the hands and face being bleached and sodden. Post-mortem lividity was of a light red colour on the dependent parts. The arms and legs were still somewhat rigid; no goose-skin; no retraction of the penis and scrotum. On puncturing the abdomen, some gas escaped, which burnt with a blue flame. The internal tissues were of a uniformly red colour, due to post-mortem transudation of blood-colouring matter. The right side of the heart was distended with gas, and contained some frothy fluid blood; the left ventricle was firmly contracted. The lungs were distended, and perfectly fresh in appearance; on section, a considerable quantity of frothy fluid escaped from them. The pleural sacs each contained about a pint of dark blood-stained fluid. There was no froth in the air passages; the mucous membrane of the larynx and trachea was of a deep red colour; the false vocal cords and adjacent parts showed very marked œdema. The stomach contained a considerable quantity of food, but no water. The abdominal organs showed no traces of putrefaction. There was no fluid in the peritoneal cavity.

I wish now to give an account of a series of fourteen cases in which drowning took place at the same moment, and the bodies were recovered after varying intervals of time. For convenience of reference, I have denoted them by numbers consecutive to the preceding cases.

On 13th November 1901 an appalling disaster occurred to H.M.S. *Active*, which was lying moored a short distance from Granton Harbour. In the night, about 3 A.M., and during the height of a great storm, the ship was dashed against the breakwater, and immediately sank, causing the death of twenty out of a crew of twenty-three on board. The seas were breaking right over the breakwater into the harbour beyond; and it will be remarked in the following account that some of the bodies were apparently washed over it into the harbour, while others remained in the open sea. I had only an opportunity of seeing fourteen of the bodies, although all were recovered. Unfortunately, it was impossible to make an internal examination in any of them, while the external examination was, owing to circumstances, frequently hurried and imperfect. Notwithstanding this, however, the records are of interest.

CASE 7.—*Body recovered in the sea within twelve hours.*—The face, head, and neck were uniformly of a florid or light red colour; the hypostatic lividity was slight, but brighter in colour than usual; rigidity very strong; pupils of medium size; penis and scrotum markedly retracted; goose-skin well developed. There was no froth at mouth or nose; the face was excoriated, but there were no severe injuries; the cuticle of the hands slightly bleached.

CASE 8.—*Body recovered in harbour within twelve hours.*—The face and neck of a bright florid colour; hypostatic lividity slight, but lighter in hue than usual, and on the anterior surface of body several patches of similar colour; rigidity strong; pupils contracted; penis and scrotum flaccid, and not retracted; goose-skin well marked; fine froth at nose and mouth; several superficial excoriations on face, apparently antemortem; the hands were clenched, and the cuticle bleached.

CASE 9.—*Body recovered within twenty-four hours on the rocks of the pier.* It had apparently been much knocked about. The face was of a light red or florid colour, swollen, and cuticle abraded in places; the lips were also bruised and swollen; there was an apparently incised wound, 2 in. long, running transversely across the chin; a wound of a similar character ran over the occiput from ear to ear, completely dividing the scalp, which was denuded from the skull as far as the supra-orbital margins, leaving the bone bare and as clean as in an anatomical specimen. The feet were bare. On the dorsal aspect of the left foot there was a clean-cut wound 3 in. long, which divided the structures down to the tendons. All these injuries were apparently of post-mortem origin. Hypostatic lividity not specially light in colour. The anterior surface of the body was pale. No trace of rigidity; penis and scrotum not retracted; no froth at the mouth; cuticle of hands bleached and sodden.

Case 10.—*Body recovered in the harbour within twenty-four hours.*—Very muscular; covered with sand and shingle; a lacerated wound in the right temporal region, 2 in. long; otherwise, body uninjured. Face and neck of uniform florid red colour; hypostatic lividity slight, but several patches of light red discoloration on anterior surface of trunk; rigidity strong; pupils medium; no goose-skin; penis and scrotum retracted; no froth; hands clenched, and cuticle bleached.

Case 11.—*Body recovered fourteen days afterwards in the harbour.*—Completely clothed, except the head, hands, and feet; the face was of a uniform dark red colour, but not swollen; the skin of the face was breaking down into a slimy mass, and the features were scarcely recognisable. The neck showed some green discoloration; the skin of the trunk and limbs, which were covered by clothes, was perfectly fresh and life-like in appearance, having a slightly pink or reddish hue. A wound ran transversely across the forehead from temple to temple, completely dividing the scalp, which was reflected from the whole of the front of the skull, leaving the bones bare and polished; the hair of the scalp was easily detachable; the cuticle of the hands and feet was bleached and sodden, and on their upper or dorsal surfaces the skin had been destroyed, leaving the tendons exposed to view.

Case 12.—*Body recovered in the harbour one month afterwards.*—Body covered with mud, and naked, except for a pair of woollen drawers. Face of a uniform red colour, and swollen; the neck was swollen, and of a greenish hue. On washing away the mud from the trunk, the skin was found to have a perfectly normal appearance; the abdomen was slightly distended; limbs quite fresh in appearance; hands and feet bleached and sodden, but skin intact; the cuticle all over the body was firm, and not easily detached; the penis and scrotum were normal in appearance.

Case 13.—*Body recovered in the harbour one month afterwards.*—Features not recognisable, owing to the soft parts and cartilages of the nose being destroyed; the soft tissues of the cheeks and other parts of the face were present, and were dark green in colour; the scalp was divided transversely across the forehead by a wound running from temple to temple, and was completely reflected from the bone, as far back as the occiput, the bones of the skull being perfectly bare, and having a polished appearance. The body was clothed in a jersey and trousers, and showed more advanced decomposition than the previous case; the abdomen was distended, green in colour, and there was some putrefactive emphysema in the skin of the neck and shoulders; the limbs presented a perfectly fresh appearance. The soft parts on the dorsal aspects of both hands were absent, the bones being exposed to view. The cuticle on the palmar aspects of the hands was bleached, and could be detached almost whole in a glove-like form together with the nails. Some of the front teeth had fallen out, and the others were loose in their sockets. The penis and scrotum were normal in appearance.

Case 14.—*Body recovered one month afterwards in the harbour.*—Clothed as in previous case; face swollen, and of a greenish hue; neck green; abdomen greenish, distended; no putrefactive emphysema; limbs perfectly fresh; in the scalp, over the vertex, a lacerated wound 2 in. long; bones of the cranium extensively fractured, as also the upper jaw and malar bones on the right side; scrotum and penis retracted. Cuticle of hands and feet bleached and sodden, but intact, except on right hand, where it was becoming detached.

Case 15.—*Body recovered one month afterwards in the harbour.*—Completely clothed; face green, swollen "gigantic," of a dark reddish green colour; soft parts of the nose absent; front teeth had fallen out of their sockets; neck swollen by putrefactive emphysema, and green. The trunk and limbs had a fresh appearance, and showed no trace of green discoloration. On the right side of the neck there were two parallel wounds, like incisions, 3 and 2 in. long respectively, extending down to the muscles. The cuticle of the hands and feet was bleached, and easily detachable in a glove-like form. The soft parts on the back of the right hand were destroyed, displaying the bare bones; penis and scrotum were retracted.

Case 16.—*Body recovered one month afterwards on the seashore, one mile from Granton.*—Body completely clothed; the soft parts of the face were present, and little altered, except the nose, which was absent; the whole scalp had disappeared, leaving the skull bones bare and polished; the trunk and limbs appeared to be quite fresh, except for one or two small patches of greenish discoloration on the former; both hands, below the wrists, consisted of nothing but the bare bones; one or two phalanges were absent; the feet, owing to their being protected by shoes, were intact, the cuticle being bleached and sodden, but not loose.

Case 17.—*Body recovered in the harbour six weeks afterwards.*—Clothed in jersey and trousers. The face was swollen, and had a white blanched appearance; cuticle easily detached; the soft parts and cartilages of the nose absent. The anterior half of the skull was bare, but the scalp, posteriorly, was present, the hair being loose, and having mostly fallen out. The neck was swollen, and green in colour; the trunk presented a general greenish discoloration, and there was some putrefactive emphysema; the limbs quite fresh and normal, except over the right shin, where the soft parts, in three places, were eaten away in regular round patches like ulcers. The soft parts of the dorsal aspect of the hands were absent, and the bones bare. On the palmar surface the cuticle was intact, but loose and detachable in a glove-like form. The cuticle of the feet was bleached and sodden, but firm and intact. The scrotum and penis were retracted.

CASE 18.—*Body recovered six weeks afterwards in the open sea.*—Fully clothed; face and scalp of a reddish green colour, and swollen; hair loose; skin of trunk green; cuticle soft, easily detached; abdomen not distended; the limbs almost quite fresh in colour and consistence; no injuries; cuticle of hands and feet bleached and sodden, but intact in every way; scrotum and penis retracted.

CASE 19.—*Body recovered seven weeks afterwards in the harbour.*—Clothed merely in a jersey; face much less changed than in any of the previous bodies, except the first four, the soft parts present and not swollen; hair intact; no injuries. The body was covered with thick soft mud, and, on removing this, the cuticle was easily detached, leaving the skin fresh and little altered in appearance. The neck and trunk were distended, and the scrotum and penis were also swollen by putrefactive gases. The cuticle of the hands and feet was bleached, but still remained intact and adherent to the skin.

CASE 20.—*Body recovered ten weeks afterwards in the open sea.*—Fully clothed; the face was unrecognisable, the soft parts being absent from the nose, forehead, and over the malar bones. Below this the tissues were present, but soft, blackish brown in colour, and stinking. All the teeth were present and firm in their sockets; the whole of the anterior half of the skull was bare, but posteriorly the scalp was present, though loose and detached from the bone. The hair had disappeared; the neck was of a greenish red colour, and swollen; the trunk had a pale greenish tint; the abdomen was distended with gases, which were not inflammable. The limbs presented a fresh and natural appearance. The soft parts of both hands had almost entirely disappeared, leaving the bones bare. Several of the terminal phalanges were absent. The cuticle of the feet was bleached and sodden, but was firm, adherent, and otherwise unchanged. The scrotum and penis were retracted.

In connection with the above cases (7–20), it is interesting to note the time when each body was recovered. All of those who perished in the disaster—twenty in number—were recovered within a period of ten weeks, but I have only particulars in regard to fourteen. Of these, nine were found within the harbour, having been apparently washed over the breakwater at the time of the wreck, while the remaining five bodies were found in the sea, outside; three close to the scene of the catastrophe; and two a considerable distance away. Of the nine found in the harbour, two were recovered by means of grappling irons during the first twenty-four hours; one rose to the surface on the thirteenth day, while two others floated at the end of a month, and two more were apparently driven on shore by the wind, also at this time; but whether these latter had become buoyant or not, I cannot say. One rose to the surface at the end of the sixth, and another at the end of the following week. In the harbour the water is comparatively quiet, except for such disturbance as the tides and the daily entrance and exit of one or two small steamers occasions. I think we may therefore exclude accidental circumstances as the cause of the variations in time of the floating of these bodies, and regard this as arising from intrinsic conditions.

Among the most striking external appearances presented by the bodies recovered during the first twenty-four hours, were the great congestion of the face and neck, and bright red colour of those parts, together with the very strong post-mortem rigidity present, except in Case 9, which had been much battered about on the rocks, and lastly the severe and peculiar character of the injuries present in this case. In the bodies recovered at a later date the slow progress of putrefaction was noticeable. In all of these the most marked evidence of putrefaction was present in the face and neck. In other parts of the body the external evidence of putrefactive changes was much less than one is accustomed to see in cases of drowning in fresh water after similar periods of immersion. The appearance of the first indications, and the rapid progress of putrefaction, in the head and neck, in drowning is so constant as to afford strong *primâ facie* evidence of drowning, or rather, to be exact, of the body having been immersed at or shortly after death. The typical appearance presented in such cases is well seen in Plate VII., Fig. 2, in which the head is swollen, deeply discoloured, and the face is becoming rapidly unrecognisable, whilst the rest of the body remains practically unaltered. I have often noticed, however, that this characteristic of putrefaction in the drowned depends upon the time during which the body remains in the water, that is to say, depends upon its remaining immersed for some hours after death. In those cases of drowning in which the body is recovered at once and placed in the mortuary in the usual dorsal position, the first putrefactive discoloration is seen at the lower part of the abdomen, as in ordinary cases of death. This observation supports the view that at least one cause of putrefaction appearing first in the neck and face in drowning is the gravitation of blood which takes place to these parts on account of the head usually occupying a dependent position in the water. Although carefully looked for, I have never been able to confirm the statement, made by several authorities, that the earliest green discoloration in the drowned is usually to be seen at the upper part of the sternum. According to my observations, it is to be found first at the sides of the neck, near the angles of the lower jaw.

A circumstance of considerable interest in connection with both the first series of cases and also the latter bodies, is the frequency with which the presence of goose-skin and retraction of the scrotum and penis were observed at a long period after death. I am inclined to believe that these conditions, in many cases of drowning, appear first with the onset of rigor mortis, and that, if bodies were examined immediately after death or before rigor mortis had appeared, they would be found absent: such early inspection of the body very rarely takes place, and, as a rule, cannot be made until many hours after death. The above view is based upon cases in which I was fortunate enough to have an opportunity of inspecting the bodies of persons within two hours after they had committed suicide by drowning. At the first inspection, neither rigor mortis, goose-skin, nor marked retraction of the penis and scrotum was present, but, after the lapse of a few hours, all these phenomena were strikingly developed. In connection with rigor mortis in the drowned, a point of some importance is the liability to confound the stiffness and rigidity of the limbs, produced by solidification of the subcutaneous fat, owing to the low temperature, for rigor mortis. An inexperienced examiner might quite easily mistake the rigidity thus produced for true rigor mortis, and draw false deductions from the circumstance. In Case 6 true rigor mortis was present in the limbs one month after death, and, in addition, the nipples were found retracted as well as the penis, testicles, and scrotum—the latter organs, indeed, in a most remarkable manner. In Case 5 rigidity of the limbs after fifteen days' immersion was also noted. The presence of well-marked goose-skin and retraction of the penis and scrotum were observed in many of the cases recorded, after periods of four, six, and even ten weeks' immersion.

Amongst the victims of the *Active* disaster, the frequency with which the scalp was found denuded from the cranium was very striking. This is an appearance, as I have already indicated, which is very common in bodies recovered from the sea, even at a comparatively early stage; while in fresh water, so far as my experience extends, it is rare until a much later period.

This condition was present in one of the bodies recovered after twenty-four hours; while it was also found to exist in one found at the end of fourteen days, and in four of those recovered later.

In Case 9 there can be no doubt that the primary cause of this condition was an injury which divided the scalp posteriorly from ear to ear. The reflection of the whole of the scalp and soft tissues from the bone, which was perfectly clean and devoid of any adherent particles of organic matter, as far forward as the supraorbital regions, must have been due to other causes, one of which most probably was the action of the water. It is not, however, easy to account for the absolutely clean and bare condition of the bone, either by violence, or, so quickly after death, from the macerating effect of water. Even severe injury directly applied to the head would scarcely denude it entirely of tendon and also periosteum; while it is difficult to understand how the constant friction of water could effect this result so soon.

At later periods the disappearance of the scalp, and the clean polished condition of the bones, may be accounted for more easily.

If the person is drowned near the shore during a storm, the head will probably receive injuries similar to that in Case 9, but, apart from such a circumstance, it is evident that after a body has sunk to the bottom it will be kept in constant movement (if the water is comparatively shallow) by the action of the waves, and thus the scalp, either anteriorly or posteriorly, becomes gradually worn away. After this occurs, I believe that fish and crabs play an important rôle in removing the remains of the scalp and subcutaneous structures, and in picking the bones clean.

In the majority of cases it is the frontal region which is first rendered bare, and this is usually associated with more or less destruction of the soft parts of the nose and portions of the cheek immediately adjacent. In the cases at present being considered, the nose was absent, and the nasal bones exposed and bare in five instances. This tendency to early destruction and disappearance of the nose and scalp adds greatly to the difficulty of identification of bodies recovered from the sea. It does not, however, render identification more difficult than the great swelling and discoloration of the face, which is the common result of putrefaction in fresh water after similar periods of immersion. Indeed, except for the loss of the nose, the face often remains in a fairly good state of preservation for a considerable time, in cases of drowning in the sea. A circumstance which strongly supports the theory that fish and crabs have an important influence on the destruction of the soft parts of the face, apart from the effects of violence, is the undoubted evidence of their action on other exposed flesh, namely, the hands and feet.

The effect of water upon the cuticle of these parts is first to render it white or bleached, then to soften it, causing it also to become swollen and wrinkled. After a time the whole cuticle becomes loosened, and may be pulled off the hands or feet in a glove-like form, as shown in Plate XII. Hofmann states that the degree of bleaching of the cuticle on these parts may afford some criterion for an estimation of the time a body has been in the water, especially when it has only been immersed for a short period. This is true; but I would point out that the bleaching and maceration of the cuticle may go on after a body is removed from the water, if the hands are in contact with wet clothes, or the feet are covered with shoes and stockings. Hence, in order to draw a correct inference as to the length of time of immersion, from the state of the cuticle of the hands and feet, these parts should be examined immediately after removal of the body from the water.

To return, however, to the question of the destruction of the soft parts of the hands and feet, water alone does not cause this, as I have already indicated; and, looking to the positions in which such destruction takes place, that is, not, first of all, on projecting parts such as the fingers and knuckles, but in the middle of the dorsal aspects and round the wrists, I think we must conclude that this is a consequence of the action of fish, and is not due to violence.

In Case 11, which had only been fourteen days in the water, the skin on the back of each wrist and on the dorsum of both feet was already absent, displaying the tendons and deeper structures.

In Case 13 the carpal and metacarpal bones with the phalanges were exposed, while on the palmar aspects the cuticle was quite intact, and could be detached whole in the form of a glove. The same condition was present in the majority of the other cases, while in the last body, found after a lapse of ten weeks, all the soft parts of both hands had disappeared, leaving only the bare bones. This is the final result of the process, so far as the flesh is concerned; the next stage being the destruction of the ligaments and the dropping off of the fingers, or even of the whole hand at the wrist.

In two bodies recovered—one at the end of six and the other at the end of seven weeks—the hands and feet were quite intact, the cuticle being merely bleached and sodden. In the first case this may be accounted for by the body having been driven out to sea, where it was found floating, and where, therefore, it would not be so liable to be attacked by fish.

In the second case it will be observed that the body was plastered with a coating of mud when found—a circumstance which would tend to prevent the flesh being attacked in the manner suggested.

Wherever the feet were covered with shoes—and in many of the bodies this was the case—the feet showed no change from normal, with the exception of bleaching of the cuticle. Very slight covering seems to protect the flesh—a fact which is especially noticeable in the case of the hands, where the thick palmar cuticle, in contradistinction to that on the dorsal aspects, is sufficient for a long time to withstand any attacks made upon it.

A SERIES OF CASES OF "NON-SEPTIC" PUERPERAL PYREXIA.[1]

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Everyone engaged in obstetric practice is liable to occasional anxiety from the occurrence of puerperal pyrexia. No doubt, in the majority of cases the fever is septic in origin—the amount of disturbance depending on the exact nature of the organism and on the dose of the poison which is absorbed into the system. Most cases get well—some spontaneously, others as the result of active treatment. It seems to me right that in the first instance one should regard all rises of temperature after labour with grave suspicion, and, when in doubt as to the cause, treat these energetically as real cases of puerperal septic fever, for delay in treatment is most dangerous. But we know that ordinary septic organisms are not the only causes of puerperal fever: there are many others, and it is in illustration of some of these that I venture to record the following cases:—

Case 1.—Mrs. P. S., æt. 23, of a highly neurotic temperament, was confined eleven months after marriage. During the whole of her pregnancy she suffered greatly from not only morning sickness, but sickness at any time of the day; was nervous and generally unhappy. So bad was her sickness up to the fourth month, that the question of procuring abortion was seriously considered, but fortunately the condition somewhat improved, though it did not cease entirely till after the child was born. The labour was practically normal, forceps being used to bring the head over the perineum, and the placenta was expressed half an hour later. At first the patient seemed very well, but within an hour she suddenly collapsed; the pulse became scarcely perceptible; her skin was pale and cold; she said she was dying, and indeed for the moment one felt she was right. There was no hæmorrhage. Stimulants were freely administered, and the patient revived, only, however, to relapse again into a semi-conscious collapsed condition. For six hours I never left her, and during that time she had frequent attacks of syncope, which, however, became less and less severe, and twelve hours after the confinement she seemed very well. She had no heart disease. On the following morning her temperature was 99°·6, and in the evening it was 100°·2. The patient was restless and very nervous. On the second morning the temperature was 101°, and in the evening it was 102°; the pulse, however, was only 80 per minute. The patient's general condition was not satisfactory; she looked ill and was sleepless. Thirty grs. each of bromide and chloral were given, but the sleep obtained was slight and fitful. On the third and fourth days there was no improvement; the temperature being very erratic, and reaching often 103°. On the evening of the fifth day the patient seemed very ill: temperature was 105°, and the pulse was 120°; she was in a highly excited state, though not in the least delirious, and talked incessantly about her immediate death. The vaginal discharge was somewhat scanty, but otherwise normal.

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[1] Read before the Edinburgh Obstetrical Society, December 1902.

Sir Halliday Croom saw the patient with me at 10 P.M., and agreed that the condition was entirely neurotic. He administered a good scolding, assured the patient that she would yet be perfectly well, and within an hour after the visit the temperature was 99°. Next morning both temperature and pulse were normal; they continued so till the end of the puerperium. However, later in the year the patient had a distinct attack of neurasthenia, for which she had a complete course of Weir Mitchell treatment, with some benefit. Nevertheless, she is still very nervous, and only the other day she herself telephoned me that she was just dying and I had better come at once. I told her I would come in an hour or two, and on my arrival I found her perfectly well, but she assured me that when she telephoned she felt that she could not live a minute.

This case of puerperal fever I regard as purely neurotic. There was absolutely no indication of sepsis, and the rapid disappearance of the high temperature, when none but moral treatment was adopted, could not have occurred except in a nervous condition. Throughout the illness there was a striking discrepancy between the temperature and the pulse rate, the latter being often nearly normal, while the former was very high; and this fact helped one in diagnosis. The condition of the pulse is always a more important indication of the gravity of a case than the exact degree of fever. The patient was not suffering from mania. She had a fixed notion that she could not possibly survive labour, and during her puerperium she was so nervous and so expectant of death that the high temperature resulted. Further, I have no doubt that the condition was aggravated by the patient herself discovering on the fourth day that her child had been born with a club-foot. This fact had up to that time been concealed from her.

CASE 2 illustrates the course and some of the anomalies of puerperal scarlet fever. Mrs. W., æt. 25, was confined of her first child on 25th September 1892. The labour was almost normal, forceps being used only towards the end of the second stage. She had a perfectly natural puerperium till the 11th day, on which she complained of slight headache and of general malaise, while her temperature rose to 101° in the evening. A mild diaphoretic mixture was given, and on the following day the temperature was 99°, and the patient expressed herself as feeling perfectly well again. On 8th October, the thirteenth day, the temperature was normal, and there were no apparent symptoms whatever. On 9th October the temperature again rose to 101° in the morning, and the patient complained of headache and depression of spirits; in the evening the temperature was 102°. On the morning of 10th October the patient felt very ill, and the temperature was 102°. The lochia was normal, and there was no abdominal tenderness. At 7 P.M. that evening the temperature was 105°, and the patient was covered with a diffuse red rash. There was no sore throat and no typical strawberry tongue, but a diagnosis of scarlatina was made. A powder consisting of pulv. ipecac. co. 2½ grs., quin. sulph. 1½ gr., and pulv. digitalis ⅓ gr., was given every two hours, but at 10 P.M. the temperature was still 105°, as it was again at 9 A.M. on the 11th. However, during that day the condition of the patient very much improved; the temperature gradually fell, till at 4 P.M. it was 102°, and at 10 P.M. 99°. The rash became less distinct, and the patient felt very much better; no sore throat developed, and there were no further symptoms. On 12th October the rash was rapidly fading away; the temperature morning and evening was 99° and 100° respectively. From this time onwards the patient made an uninterrupted recovery; desquamation occurred throughout a period of six weeks, without a complication of any kind whatever. The baby showed no signs of scarlet fever.

There are one or two points of interest in this case. First of all, how did the infection occur? An interesting fact was elicited. Three weeks before her confinement, Mrs. W. visited a cousin, and that very day my then chief, the late Dr. Williamson, saw this cousin on account of peeling of the skin, and he diagnosed that she had had a mild attack of scarlet fever, which opinion was confirmed by the occurrence of a bad case in the house some days afterwards. Is it possible that the patient was infected several weeks before the symptoms appeared? Apparently it is so, and it is one of the anomalies of puerperal scarlet fever that the incubation period may be very much prolonged. Many similar cases have been recorded. At all events, there was no other known means of infection in this particular case.

Further, the disease did not present the usual features. There was no sore throat and no typical strawberry tongue, but there was slight albuminuria, though, under the circumstances, I do not lay much stress upon that. I know that some authorities doubt the nature of these so-called puerperal scarlatinas, and hold that the majority are really cases of septicæmia. I think there can be no doubt about this case: the symptoms did not appear till the eleventh day; there were absolutely no local indications of sepsis; the rash covered the whole body completely, and was not confined to one part, as is so often the case in septic rashes, and the convalescence of the patient presented all the special features of an ordinary scarlatina.

CASE 3.—Mrs. K., 2-para, was confined on 4th August 1899. Labour was perfectly normal and easy. She was absolutely well till the seventh day, when, without any warning, she had a rigor, and her temperature rose to 103°. Thereafter she complained of severe headache, pain in the back, and general aching. The lochia was normal, though afterwards it was scanty, and there was no abdominal tenderness. Accordingly, a diagnosis of influenza was made. Under the usual remedies the temperature rapidly fell, and by the eighth day the patient felt very much better, the evening temperature being only 99°·8. On the ninth morning a second rigor occurred, and the temperature ran up to 104°. In the afternoon it was still 102°. In case, by any chance, the cause was a septic one, I administered an intra-uterine antiseptic douche, but the discharge that came away was normal, and immediately afterwards the patient had another rigor with high temperature. She was put on two-hourly doses of quinine and digitalis, but, in spite of these, at 9.30 P.M. another rigor occurred, and the temperature ran up to 105°, while the pulse was 144, and the patient seemed alarmingly ill. At 11.30 P.M. Dr. Milne Murray kindly saw the patient with me: by that time the temperature had fallen to 102°, and on examination Dr. Murray could find no septic cause. He agreed that the condition was probably influenzal, and advised a continuation of the quinine, etc. By next morning the patient's temperature was nearly normal, and from that time she made an uninterrupted recovery, being practically well in three days.

In this case the patient was no doubt infected by the nurse, who had had a very severe "cold in the head," as she called it, and confessed that she had been feverish for a day or two after her patient's child was born. She did not take to bed, but I have no doubt that she was suffering from influenza, and that, though her suffering was comparatively slight, the infection was sufficient to cause most alarming and disquieting symptoms in a puerperal patient. I never really thought the patient had septic fever, although, as a matter of precaution, I did wash out the uterus. She had not the well-known expression and countenance of a septic patient; and, what is equally important, she had not the characteristic earthy septic odour. The frequent rigors certainly suggested absorption of repeated doses of some poison from a local nidus, but frequent rigors may also apparently occur in puerperal influenza.

CASE 4.—Mrs. H., primipara, was confined on 12th August 1899. Forceps were used when the head was low down, and delivery was easily effected. On the third day the patient had the usual castor-oil, and she was perfectly well. However, at 4 A.M. on the fourth day I was sent for, as she was very feverish and complained of great pain in the right side. The temperature was 102° and the pulse 120°. Morphia was injected hypodermically, and this somewhat relieved the pain, but later in the day it recurred as badly as before. On examination per vaginam, everything seemed normal, but the tenderness in the right iliac region was so great that even the skin could scarcely be touched. The temperature continued at 102° and the pulse at 120°. Quinine and *digitalis* were ordered every three hours, and, though the lochia was *quite* normal but somewhat scanty, vaginal douches were ordered at intervals. On the fifth day the symptoms were just the same, and the pain in the side still very acute. The patient seemed very ill, and the skin had a yellowish white moist appearance, which was very suggestive of sepsis. The temperature in the morning was 102°, in the evening 103°. Per vaginam nothing in the fornices could be determined. I resolved to administer an intra-uterine douche, and accordingly the cavity was washed out with a weak solution of corrosive sublimate. Almost immediately afterwards the patient had a severe rigor, and the temperature ran up to 105°. It gradually subsided, but at 10 P.M. was still 102°. On the morning of the sixth day the temperature was 99°, and in the evening 100°; the patient was much better, and the pain in the iliac fossa was much less. Two days later there was practically no tenderness on pressure; the temperature was normal, and thereafter a complete and rapid recovery took place.

At the time I did not recognise the nature of this case; I thought of all possible pelvic conditions, especially of a ruptured pyosalpinx, but soon afterwards I came to the conclusion that it was a case of puerperal appendicitis. Perhaps it is well I did not recognise it at the moment, for I might have advised instant operation in the hope of discovering a ruptured appendix. I could not satisfy myself that the Fallopian tube was the seat of mischief; and it was only afterwards, when the patient could give me her previous history, that I surmised that the appendix was the seat of pain and the cause of the general symptoms. I have seen several cases of appendicitis during pregnancy,—in one case it seemed to be the cause of premature labour; but this was the first case I have seen in which appendicitis gave rise to serious trouble during the puerperium. What happened to the appendix during these days I do not know, but at all events the patient did not for a long time afterwards have a single symptom. Later, however, I heard from her husband that she had again presented all the features of appendicitis.

In connection with this case there is one point to which I wish specially to refer. It is the occurrence of a rigor and high temperature after the intra-uterine douche, and I should be very glad to know whether the experience of other Fellows of the Society coincides with mine. I have several times noted this rigor, but always in cases in which the result of the douche proved that there was no retention of septic material; and indeed I observed it in one or two of the other cases recorded to-night. In cases where there has been urgent need for an intra-uterine douche, the result has been no rigor, but a rapid fall in the temperature, at all events for a time. It may have been an accident; but it has been my experience so often, that I am rather inclined to welcome a rigor after an intra-uterine douche than otherwise.

CASE 5.—Mrs. M. was confined of her fourth child on 2nd November 1901; the child was born before I arrived at the house, and the placenta followed soon after. She was very well till the evening of the second day, when she complained of a sore throat and was somewhat feverish. On the following morning her throat was no better, and on examination it proved very red and angry. On the evening of the third day the throat was just the same, and the temperature was 101°·5. The condition of the throat did not improve with the usual remedies, and on the fourth day the morning temperature was 102°, while the evening one was 103°. At the evening visit on that day I observed what I took to be a commencing diphtheritic patch at the base of the uvula, and when I saw the patient at 8 A.M. on the fifth day the membrane was well formed, and affected not only the whole of the uvula, but part of the right tonsil as well. I sent the patient to the Fever Hospital as soon as possible, and I am indebted to Dr. Claud B. Ker for the further temperatures of the case. The patient was very ill for some days after admission, the pulse being small, soft, and irregular. The condition of the throat rapidly improved under the antitoxin and other treatment, but six days elapsed before the fever disappeared. The patient made thereafter an uninterrupted recovery.

The cause of the puerperal diphtheria was not difficult to find. On examination by the sanitary authorities, the drains were found imperfect, and there was a free communication between these and the room in which the patient was confined.

CASE 6.—Mrs. M., primipara, was confined on 13th August 1900. The labour was prolonged, and proved a difficult forceps case: the perineum was torn, and two stitches were inserted. For thirty-six hours the patient was very well, but suffered from retention of urine, so that the nurse had to use the catheter. On the third day everything seemed normal, and the patient passed water at intervals. However, that evening her temperature, after a slight rigor, went up to 102°. On the morning of the fourth day it was 100°, but by 4 P.M. had again risen to 102°. The nurse assured me that the patient was micturating normally, and the lochia was not offensive. However, I washed out the uterine cavity, and this operation was followed by a rigor and a further rise of temperature. At 10 P.M. it was still 102°, and during that night the patient became delirious: she got out of bed and walked into an adjoining room where the nurse was sleeping, and of this visit she had no recollection afterwards. On the morning of the fifth day the temperature was 102°·5, but I was assured by the nurse that the bladder was normal and the discharge aseptic. However, on examining the abdomen, I found it occupied in front by a large, fluctuating, tense swelling, which extended above the umbilicus. I at once passed the catheter and removed a very large quantity of urine, and the tumour disappeared. Within four hours the temperature was normal, and it never again rose above 99°. For some days the catheter was passed twice daily, but, soon after the stitches in the perineum were removed, the patient regained complete control of the function of micturition, and ultimately made an excellent recovery.

In this case the sole cause of the alarming temperature and symptoms, even to the extent of delirium, was retention of urine, and at first both the nurse and I were misled by the fact that the patient passed a certain overflow of urine at regular intervals, not by constant dribbling, as is more frequently the case.

The cases which have just been recorded illustrate a few of the causes of puerperal fever, other than ordinary septic infection. There are, of course, many others, but only those which are somewhat unusual have been selected. One need not do more than mention those frequent puerperal cases in which fever results from acute constipation, from chill, from emotion, from congested mammæ, from sore nipples, or from reflex irritation, which are in the common experience of all. A puerperal patient may be attacked by any acute disease, and four of my cases are really examples of this. It is often difficult at first to distinguish these intercurrent acute illnesses from septicæmia, but it is a good rule to suspect and treat all such as of septic origin until symptoms develop which render a diagnosis clear.

I have ventured to read this paper, partly in response to the appeal of our President for records of clinical experiences, and partly in the hope that what has interested me may interest others and lead to some discussion in the Society.

REVIEWS OF BRITISH AND FOREIGN LITERATURE.

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Practical Physiology. By **Beddard**, **Edkins**, **Hill**, **Macleod**, and **Pembrey**. London: Edward Arnold. 1902.

The activity displayed by physiologists in the production of text-books on subjects connected with their department is, I think, unequalled by any other department in medicine, at least when one takes into account the relatively small number of men employed in physiological work. Text-book succeeds text-book until one wonders whether a physiological teacher can ever be satisfied with the work of his fellow-craftsman. This work has been compiled under the most favourable auspices, as not only is there a good subdivision of labour, but each writer is actively engaged in practical teaching, and hence knows what the student requires. It is not necessary to give in detail a description of the method of arrangement adopted by the authors, except to say that there are elementary and advanced courses in experimental and chemical physiology. In both cases it is difficult to know why certain things should have been included in the advanced courses and others relegated to the elementary; for example, extensibility and elasticity of muscle in the advanced and the numerous optical experiments in the elementary. Of course, a certain amount of overlapping is bound to occur, especially perhaps in the chemical. Every teacher will be grateful to the authors for the inclusion of many experiments which do not find a place in other books; for example, movements of the cat's stomach and intestines (Cannon) observed on fluorescent screen by Röntgen rays, numerous pharmacological experiments, such as action of drugs on heart, blood vessels, central nervous system, and an excellent account of experiments on the special senses. Taken as a whole, the authors of the experimental sections have avoided inclusion of excessive theoretical details. The descriptions of experiments are remarkable for their lucidity. With regard to the chemical sections, some will probably think that there is too much theoretical matter, which is not necessary for the proper understanding of the practical work. Thus one does not go to a text-book on practical physiology for a description of mode and seats of formation of urea, uric acid, purin bases, etc., but one does expect to find in an advanced course some description of an accurate method for estimation of chlorides in urine (Volhard), and a gravimetric method or such a one as that of Neumann for estimation of phosphorus in organic substances. The experiments are, however, well marked off from the theoretical matter, and in most cases are exceedingly well described. There are, however, some exceptions, for example, Trommer's test for glucose, and the formation of biuret from urea. It is unfortunate that in the experimental section, where there is so much that is excellent, there should be no sufficient description of experiments with the capillary electrometer or galvanometer; for example, estimation of differences in potential, and resistance in animal tissues, or of conductivity in animal fluids. I hope that I may be pardoned for what may appear to be carping criticism. It is because the book is such a useful and valuable one, both as regards experimental and chemical work, that one feels constrained to point out what appear to the writer to be slight blemishes. It is a veritable storehouse of experiments, suitable for demonstrations and students' individual work, and constitutes a most valuable contribution to English physiological literature. The authors have every reason to be proud of their work, and teachers can best show their gratitude by recommending it to their students. Letterpress and plates are alike excellent. T. H. MILROY.

Traité de Microbiologie. Tome iii., "Fermentation Alcoolique"; tome iv., "Fermentations variées des diverses substances ternaires." By E. DUCLAUX. Paris: Masson et Cie.

IN a former review we gave a survey of the contents of the first two volumes of this work, pointing out especially the important functions which diastases had been shown to perform in the synthetical and analytical processes of the lives of micro-organisms. Thus many of the so-called vital activities have been found to depend on the formation of these bodies, the only test for the existence of which is supplied by the appearance of the chemical substances formed by them. In the present two volumes, which are of a more specialised character, the same ideas are carried out and further developed. Vol. iii. is concerned with the subject of alcoholic fermentation. Since the establishment by Pasteur of the importance of the anaerobic state in the production of alcohol, the chief discovery has been that made by H. Buchner, namely, that, under anaerobic conditions, the yeast cell forms and sets free a diastase or zymase, which produces the characteristic fermentation. The question therefore comes to be, Why is the zymase discharged from the cell during anaerobic life? In connection with this there is taken up the study of a great many other micro-organisms which have the property of forming alcohol; in fact, this property has been found to be a comparatively common one, and the presence of alcohol in the outer world has been shown by modern methods to be comparatively widespread. The phenomena of the aerobic and anaerobic life of the yeast cell are minutely examined, and the relations of cell multiplication, consumption of nutriment, and fermentative activity, under the two conditions of existence for varying periods of time, are compared. The greater part of the volume may be said to be occupied with the physiology of the yeast cell. Amongst other subjects treated we may mention—its histology, its chemical composition, its nourishment as regards minerals and organic stuffs, the various zymases demonstrable in the juice of yeasts (proteolytic, oxidising, reducing, etc.), and the various physical conditions influencing alcoholic fermentation. Most of this is of essentially technical nature, and full accounts of researches, chiefly of the French school, are supplied. In the last chapters the subject is treated from the industrial or commercial point of view.

In vol. iv. a study of other ferments is carried out. Various bacteria and higher fungi are examined as regards the chemical changes produced by them in the anaerobic state, for it is in this condition that the disintegrative or analytical changes, as a rule, reach their maximum; whereas (in the case of the facultative anaerobes) proliferative activity, with the accompanying synthetical processes, is most marked in the aerobic condition of life. In this study not only are the nature of the products and the proportion in which they appear studied, but also the rate at which they are produced at different stages of the process. For example, in connection with the group of bacteria producing butyric acid fermentation, it is shown that the *Bacillus amylozymes* not only forms from sugar butyric acid but also acetic acid, the amount of the latter gradually diminishing as the process of fermentation goes on. So also the *B. orthobutyricus* forms butylic alcohol with a certain amount of butyric and acetic acids, the two latter being, however, transitory formations. The important fact deduced from these and like results is, that the same organism, under slight variations of conditions of growth, may produce different analytical changes, presumably by forming different zymases. Ferment action is thus not a fixed or stable function of the micro-organism. The same method of examination is applied to, amongst others, the group comprising Friedländer's bacillus, *B. lactis aerogenes*, *B. coli communis*, and the typhoid bacillus. With regard to these, the author finds that they are closely allied both structurally and functionally, and that none of the fermentative properties are characteristic of one or other organism, as none of them are fixed. Of other matters treated of at length, we may note acetic and lactic fermentations and the organisms concerned in them, the fermentations of cellulose, of fatty matters and other substances, the ageing of wines, the *maladies* of wine and beer. A bibliography is attached to each chapter.

These two volumes together comprise about 1500 pages; and when it is stated that they abound in detail, an idea of the extent of the subject in its modern developments is obtained. In parts the work is perhaps a little diffuse in style, and the accounts of various researches, given practically in full, might have been better in a condensed form. The practice of giving a *résumé* at the end of subjects might also have been with advantage more generally adopted. But, both as regards scope and minute analysis, the work is unique, and may be said to form a worthy monument raised on the foundations laid by Pasteur.

ROBERT MUIR.

The Principles of Hygiene. By D. H. BERGEY, A.M., M.D., First Assistant, Laboratory of Hygiene, University of Pennsylvania. London and Philadelphia: W. B. Saunders & Co.

As in this country, so in America, public health manuals continue to appear. The volume by Dr. Bergey has certain distinctive features—compactness, lucidity, and a certain novelty in the selection of illustrative materials. As an introduction, the book will secure a place in the schools; but the national differences naturally make it more of an American than a British handbook. The introductory pages are somewhat abstract in their account of the causes of disease. "Hereditary influences are such as act from within the body, and are therefore non-preventible" (p. 22), is not a very happy way of putting the case. "Connate conditions"—temperament, idiosyncrasy, and diathesis—are described as if they were other than merely inheritances. The distinction between "sanitary science" (p. 27) and "hygiene" is somewhat supererogatory, suggesting useless differences. Chap. i. deals with air. The table of American climates (pp. 44, 45) gives good material for comparison. The paragraphs on ground-air, sewer-air, and some others would gain by the incorporation of some precise quantities, which are abundantly available. The impurities of air are well summarised. Chap. ii. deals with ventilation—a subject, as a rule, more effectively handled in American than in British engineering books. The details of mechanical ventilatiōn are adequate, so far as they go; but a diagram of a "system" would have been an improvement. Heating (chap. iii.) indicates, rather briefly, the leading methods. Water and water-supplies (chap. iv.) are dealt with in fifty-three well-crowded pages. The chief interest for European readers will be the report by a Committee of the American Public Health Association on standard methods of analysis of water and sewage. The special chapter on removal and disposal of sewage (chap. v.) contains little that is not already familiar in English text-books. The chapter on "Food and Dieting" is well loaded with analytical data. The "fifty dairy rules" (pp. 213–217) show that the milk question is much the same in America as here. They are the product of the Bureau of Animal Industry, and are obviously the fruit of practical service. There are chapters on exercise, cleanliness, and clothing. These are followed by special chapters on (*a*) industrial hygiene (pp. 252–268), which contains a good table from Massachusetts statistics, with a summary of recent dust-researches; (*b*) school hygiene (pp. 269–285), which contains some sound observations on medical inspection of schools; (*c*) military hygiene (pp. 287–304); and (*d*) naval hygiene. The last contains an important table by Dr. Gihon on the weight, height, etc., of marines. The remaining chapters deal with "Soil," which is not elaborately handled; "Habitations," which are treated very generally; "Vital Causes of Disease," which includes a discussion of immunity, a tabular summary of "etiologic factors" of infection, and considerable detail as to yellow fever. The chapter on "Disinfection" is practical and adequate. Chap. xix., on "Quarantine," contains the very important quarantine regulations of the United States, which still maintain a system largely discarded in this country. The thoroughness of those is unquestionable; but the sufficiency of the much simpler British Regulations is, in practice, probably as complete. The last chapter, xx., deals with "Vital Statistics" in a rather summary way. This brief *précis* is enough to indicate the inclusions and omissions of this book, which, partly on account of its materials, cannot displace the good English text-books, but may with profit be retained for reference.

W. Leslie Mackenzie.

Selected Essays and Monographs (from Foreign Sources). By VARIOUS AUTHORS. London: The New Sydenham Society.

ONE of the excellent objects aimed at by the New Sydenham Society is to rescue from the oblivion to which magazine literature, after a brief and frequently hurried perusal, is too often consigned, contributions of more than ephemeral interest, or to render those accessible to English readers which have originally appeared in foreign periodicals. Of such a nature is the volume before us, which to the extent of two-thirds is devoted to syphilis, while the remainder deals with articles on various subjects connected with skin diseases. The first two papers, by Marschalco and Ehlers respectively, take cognisance of the etiology of tertiary syphilitic manifestations. This is, from the point of view both of the doctor and the patient, a matter of deep concern, since it is on these later developments that the danger of syphilitic infection depends. In relation to this a most interesting problem crops up, that of the real influence of mercury. Is it a true specific against the syphilitic virus? The most conclusive proof that it is so is its effect on transmissibility. "As far as we know at present, it must be taken as certain that the transmission to offspring is absolutely independent of the manifestations of the disease, and may occur apart from any manifest symptoms either in the genital organs or in the organism as a whole. This very power of transmission is, beyond all other symptoms, influenced and abolished by mercurial treatment." Marschalco concludes, both from close reasoning and statistics, "that the chief cause of tertiary manifestations is to be sought in a complete neglect or insufficient application of mercurial treatment at the commencement." In its essence tertiary syphilis cannot be regarded merely as metastasis, but is in most cases derived from remains of exudation persisting in the tissues, called into activity by many different agents of excitation. The inefficient mercurial treatment of slight forms of syphilis in the primary and secondary stages account for a large proportion of tertiary phenomena. Mercurial treatment exercises a preventive action even in the tertiary era, and can effect what iodides alone seem powerless to do, though they have a temporary curative power, namely, the avoidance of relapses. Ehlers emphatically notes that we must not hold too strongly the dogma of the non-infectiousness of tertiary lesions, as far at least as these refer to gummatous ulcers on the genitals, and relates a highly instructive history in support of this view. Two articles by Erb on locomotor ataxia occupy a considerable space. On going over the first of these, one is almost inclined to regard its reproduction as superfluous, inasmuch as it but brings out a little more clearly perhaps than before the idea of its close association with syphilis; but when one turns to the second, dealing with the all-important question of treatment, it is at once apparent that for a due comprehension the two must be read consecutively. Nowhere have the methods by means of which we endeavour to cope with it been so fully discussed, and a perusal cannot fail to lessen the feeling of utter hopelessness experienced when called to prescribe for this too common complaint. Lasch, writing on icterus syphiliticus precox, decides in favour of this being a specific affection, and not merely a catarrhal jaundice in syphilitic subjects. Incidentally he observes that it is wrong to assume as a matter of course that visceral and gummatous syphilis are synonymous terms. Though the condition has been recognised previously, yet Fournier's article on recurring syphilitic roseolas will serve to attract attention to a somewhat puzzling eruption, and one which depresses—perhaps unduly—those in whom it occurs. Passing over the paper by Jadassohn on dermatoses produced by drugs, a learned but abstruse production, much more interest will be taken at this moment in those by Nielsen and Hartzell on the effects of arsenic on the skin. Arsenical pigmentation is fully described, and its characteristic features dilated on by Nielsen. Then arsenical keratosis is considered, its range being wider than at first appears, as some peculiar keratodermias of the palms and soles, to which attention has been drawn both by Brooke and Besnier, seem really referable to this cause. Hartzell's paper deals with epithelioma as an occasional sequela of psoriasis through keratosis, and, like Hutchinson, he traces this also to an arsenical source. It is somewhat singular in view of the neuritis attributed to arsenic in the beer-drinkers' epidemic recently under investigation, that though phenomena referable to the nervous system are casually alluded to, yet it is evident that such are not prominent features in those who, for one reason or another, have taken arsenic for long periods of time in medicinal doses. The idea has been borne in upon the writer of this review, that possibly some other deleterious agent, as cocculus indicus, may have found its way into the beer, and in presence of the arsenic set up the neuritis. Of the remaining three short papers, one is the address read by Boeck on lupus erythematosus at the meeting of the British Medical Association held here four years ago. It contains all the arguments in favour of its tuberculous origin, put forth with all its author's ability and clearness. From what has been said it will be seen that the book is an interesting and valuable one.

W. ALLAN JAMIESON.

The Work of the Digestive Glands. By Professor J. P. PAWLOW and W. H. THOMPSON, M.D. London: Charles Griffin & Co., Ltd.

THIS is a short book of some 200 pages, consisting of nine lectures delivered by Professor J. P. Pawlow of St. Petersburg. To physiologists everywhere, the work done by Pawlow and those who have worked under him in the Physiological Department of the Institute for Experimental Medicine, is familiar, and its value fully recognised. But to the general practitioner his work is probably little if at all known, and as these lectures were delivered to an audience of medical practitioners, it is to the practitioner that the volume before us will chiefly appeal. It is not a text-book on the subject, but it presents to its readers, in a concise and very readable form, an account of various experiments carried out on the digestive glands during a number of years; and embodies Pawlow's views on that complex subject. It is not overburdened with figures, only such being introduced as are necessary to support his statements. The effect of different kinds of food-stuffs and mechanical stimuli in exciting glandular activity is dealt with; and it is shown how beautifully the several glands adapt themselves to the amount and nature of the work they are called on to perform. This information gives us a valuable guide to the important subject of Dietetics, and in Lecture viii. Professor Pawlow brings the results of his observations into line with the everyday habits of the human race in regard to food. He emphasises particularly the importance of appetite in producing a flow of gastric juice, and urges the physician to pay more attention to the treatment of loss of appetite. Some other therapeutic hints are given which are worthy of consideration.

A word must be said for the excellence of the translation, which is thoroughly idiomatic, and gives the reader no feeling of its being a translation. The book itself is well printed, and practically free from typographical errors, a few minor ones only being noted.

C. M. Pearson.

La Figure Humaine: Introduction à l'Étude de la figure humaine. By Dr. Paul Richer. Paris: Gualtier, Magnier et Cie.

This work, from the facile pen of Dr. Richer, serves as the introduction to a series of forthcoming volumes in which the human form will be discussed in its manifold relations to art. There is no better authority on this subject than Dr. Richer; and the manner in which he proceeds to develop his thesis is amply attested by a glance at the table of contents, wherein may be found chapters dealing with the "Relations of Science to Art," "Plastic Anatomy," "Instantaneous Photography," and "Artistic Physiology." It would, of course, be premature to express any opinion on the larger work from a perusal of the present volume; suffice it to say, that our curiosity has been aroused and our interest stimulated by the many suggestive observations of the talented author. To some of us certain of the statements made in the chapter on "Plastic Anatomy" may appear rather strained, as for instance the opinion expressed to the effect that even a skilled anatomist may be nonplussed when asked to apply his knowledge to the analysis of the forms displayed by the nude model; but our own personal experience goes to prove the correctness of this statement. So, too, we heartily agree with Dr. Richer when he tells us that, so far as the education of artists is concerned, the practice of dissection and the use of the cadaver are quite unnecessary—in fact, are more likely to do harm, owing to the repugnance which they naturally excite in persons of a highly artistic temperament. We await with interest the appearance of the remaining volumes, which will deal in detail with the scientific and artistic aspects of the subject, and which, we are advised, will be fully illustrated with photographs from nature and from works of art.

Arthur Thomson.

La Beauté de la Femme. By Dr. C. H. Stratz. Traduit par Robert Waltz. 180 Illustrations. Paris: Gaultier et Cie.

Some time ago we drew attention to the prospectus of a series of volumes dealing with the scientific and artistic aspects of the Human Figure. The first of these, published under the direction of Dr. Paul Richer and M. Paul Gaultier, has just made its appearance. It is entitled "La Beauté de la Femme," and is a French translation of Dr. C. H.

Stratz's well-known book, "Die Schönheit des weiblichen Körpers." In the sixteen chapters which the volume contains, the author takes up the consideration of such subjects as the "Modern conceptions of beauty," "The representation of feminine beauty in the plastic arts," "The beauty of women as referred to in literature," "The theory of proportions," "The influence of disease and dress on the conformation of the body," etc.

Dr. Stratz's attempt to explain all beauty as dependent on a physical basis is unsatisfying. Mere perfection of form does not constitute beauty: much depends on how it appeals to our æsthetic sense. It is here the artist helps us: he interprets for us, and enables us to realise beauties which might otherwise have escaped unseen.

It is all very well for us as physicians to point out the physical defects of many of the types of beauty portrayed by the most eminent artists, past and present; but such criticism, though it savours of the academic, will not in any degree affect our pleasurable sensations on beholding those harmonious conceptions which so forcibly appeal to our perception of the beautiful.

It was hardly to be expected that, in a work designed for mothers, doctors, and artists, the subject could be treated other than in a popular manner. It therefore seems rather surprising that it should form one of the volumes of the scientific as distinct from the artistic series. There are few scientific facts or observations in the book with which the ordinary medical man is not already familiar.

The volume is profusely illustrated by photographs from the nude. For our part, we fail to see any reason for so liberal a display of the undraped figure; and, speaking from our knowledge of the British mother, we do not hesitate to say that it is not very likely to meet with a cordial reception at her hand.

To the artist, perhaps, this treatise may prove of interest. In it he will find reliable information regarding the more common defects of the female form, and, though the illustrations may not satisfy him as types of beauty, yet they may serve to enlighten him on what to avoid.

ARTHUR THOMSON.

Review of Neurology and Psychiatry. Edited by **ALEX. BRUCE**, M.D., and **EDWIN BRAMWELL**, M.B., C.M. Edinburgh: Otto Schulze & Co.

THE first number of this new monthly Journal has unfortunately reached us too late to allow space for anything beyond the expression of a warm welcome. We wish and offer to Dr. A. Bruce, editor, Dr. E. Bramwell, assistant editor, and their numerous collaborators, our hearty congratulations on the appearance of the "Review," and our sincere wishes for its success. There can be no doubt that such a periodical has been wanted in this country, and the new monthly should prove of real utility. The present number contains original papers by Sir William Gowers, Sir John Sibbald, and Dr. Byrom Bramwell, and a long series of abstracts by a brilliant galaxy of fellow-workers. These abstracts are most admirably executed, and those responsible for them have not forgotten: *Vitæ summa brevis spem nos vetat inchoare longam.*

RECENT ADVANCES IN MEDICAL SCIENCE.

MEDICINE.

UNDER THE CHARGE OF

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RAYNAUD'S DISEASE.

BARBER (*Quart. Med. Journ.*, Sheffield, November 1902) reports a case which he assigns to the local aphyxia of Raynaud, and which was characterised by unusual severity and duration.

Mrs. X., æt. 25, in July 1899 bore her first child. Menstruation commenced at 14; when 19 she began to suffer from peculiar attacks always during a period, but not during every one. She felt faint and numb; her lips became black—her face, ears, hands, and feet absolutely cold and blue. In twelve to twenty-four hours these symptoms disappeared. She also frequently noticed red patches appearing on her legs. Married in 1898, when 24, despite warning as to her risk if she became pregnant; but she became so, as noted above. At once her health improved; the cyanotic attacks vanished. In April of this year she, however, developed symptoms which suggested rheumatic fever. The temperature was only 100°, the pulse 86 and soft, heart's sounds normal, slight hæmic bruit, lungs healthy, face somewhat cyanosed, toe and finger nails rather blue, but painless and warm; and some dyspnœa on exertion. The limbs and joints were here and there painful and swollen. The affected parts were wrapped in gamgee. Urgently recalled a few hours after, Barber found the patient seemingly in the final stage of asphyxia. Face and neck, ashy grey-blue; lips, ears, nose, and tongue, dark bilberry-juice colour; fingers, hands, and feet, blue, but not particularly cold to touch. Despite appearances, she was lying quite quietly in bed; no dyspnœa, pulse 100, of good volume; no loss of consciousness, only semi-dazed, and sinking feelings. She had previously vomited everything given her, so only a small quantity of strychnine in soda water was administered, and she was left quietly at rest. Next morning, symptoms had almost completely disappeared; but on getting up out of bed later on in the day, against orders, another similar attack occurred, less severe than the first. Since recovery from the second, she had not experienced any further attacks of this nature, up to date of the report. There never was any hæmoglobinuria. The attack particularly described closely followed a menstrual period more profuse than usual, much railway travelling and excitement in London, a tooth extracted two days beforehand under gas, etc. etc.

CHRONIC SPLENOMEGALY, WITH ANÆMIA AND MYELÆMIA.

EMILE-WEIB and Clerc (*Arch. gén. de méd.*, Paris, November 1902) describe the symptoms and characters of a condition which, as they suggest, constitutes a new pathological syndrome, and which may be named as above.

The disease commences insidiously. Little by little the persons attacked become languid, scant of breath, begin to suffer from discomfort and vague pains in the left hypogastric region, and after the lapse of some days, or of as many months, may discover the presence of a tumour in the region of the spleen, or, and much more often, a physician finds it for them.

The clinical signs and symptoms are almost always the same. Intense pallor of face, it may be tinted slightly yellow; extraordinary pallor of the mucous membranes. Cardiac sounds, weak; venous hum in neck; hæmorrhages frequent—epistaxis, oral, ocular, or uterine. The spleen is always enlarged, often greatly. The lower border may descend as far down as the left iliac crest—even may invade the right iliac fossa. It is tender on pressure, and resistant to touch. The liver may be enlarged (in eight out of twelve cases), but never so markedly. True jaundice is always absent. The lymphatic glands are only affected in some cases, and then only moderately. Occasionally the bones are the seat of pain. In one case there was an ovarian tumour of the same structure as the splenic hypertrophied tissue.

The urine now and then contains traces of albumin, never of proteoses. v. Jaksch found in one case marked diminution in phosphates, increase of uric acid.

The physician seldom sees cases of this affection until it is well advanced, when further evolution is much more rapid. The shortest course observed was three weeks only; three to four months is more common, but some have continued for more than a year. The prognosis is practically hopeless.

Discussing twelve cases of the disease,—two personally met with, and ten reported by other observers,—the writers admit that no clear etiological factors can be inferred. The sexes equal; the ages varying from 10 to 68; nor alcohol, syphilis, nor unhygienic conditions, attachable of blame. Bacterial? Eh? There is nothing else to accuse.

The blood is generally very deficient in hæmoglobin, sometimes only moderately so. Decrease of the number of red corpuscles may be extreme—245,000 only per c.mm. in one case; but may not necessarily accord with the progress of the disease—may even increase before death. The corpuscles are, many of them, of abnormal sizes and shapes; but this in less degree than in pernicious anæmia. Nucleated red cells are constant, sometimes numerous—5914 in Jawein's case—and are varied in type. The larger, or megaloblasts, aid in prognosis, showing as they do a proportional increase, during the progress of the disease, over the normoblasts in numerical relationship. With regard to the white cells, leucocytosis and leucopenia are almost equally rare—one to two in twelve cases; the majority exhibiting values per c.mm. of 12,000 to 15,000, only one case 38,400 up to 70,000, and two 2400 and 2772.

Abnormal leucocyte forms are always present: this fact, combined with the large number of nucleated reds, characterises the malady *à le point du sang.*

Leucocytic Types.	Increase.	Decrease.
MONONUCLEAR—		
Neutrophile	+	...
Eosinophile	...	−
Basophile	...	−
Non-granular (lymphocytes) . . .	+	...
Large	+	...
Large non-granular basophile (of Tuerck) .	once	noted.
POLYNUCLEAR—		
Neutrophile	...	−(?∓)
Transition do.	+	...
Eosinophile	±	±
Basophile	±	±

The data given for the normoblast and megaloblast red cells in the detailed cases scarcely seem to warrant the writers' conclusion that their relative values are of much signification.

Summing up, there exists a marked splenomegaly, with or without hepatic enlargement, and apart from any great lymphatic glandular enlargements and from ascites. There is also an increase of nucleated red cells, normal or abnormal size, and of neutrophile myelocytes; *i.e.* a myeloid condition of the blood, with but slight leucocytosis. The spleen and bone marrow exhibit a hyperplasia of myeloid character, more or less complete; and the liver and lymphatic glands may suffer from the same. Though akin to pernicious anæmia and to myelogenous leukæmia, the facts observed warrant the conclusion that the condition is a disease by itself, and deserves a special name.

SURGERY.

UNDER THE CHARGE OF

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On the Treatment of Syphilis by Intramuscular Injections of Mercury.

Colonel Fawcett, R.A.M.C. (*Army Med. Dep. Rept.*, London, 1900), in an appendix to this report, gives his experience of the continuous treatment of syphilis by intramuscular injections of mercury, as carried out among the troops in the Egyptian command since 1899. In the memorandum issued to medical officers, instructions were given that the intramuscular injections were to be generally adopted, and that the treatment was to be carried out continuously for a period of eighteen months. In the event of a man being transferred to another charge while under treatment, advice was to be forwarded to his new medical attendant, in order that the treatment might be continued. Except on medical grounds, no man was allowed to escape continuous treatment. Every man was seen once a fortnight as long as active symptoms were present, and at least once a month during the whole period of treatment. No case was to be discharged as cured until it had been eighteen months under continuous observation and treatment. The prescription used was—"℞ hydrarg., 1 drm.; lanoline, 2 drms.; olive oil, 2 drms. Sterilise the olive oil by boiling, then rub the ingredients well together for at least four hours." The maximum dose recommended is 5 minims, "to be administered not more frequently than once a fortnight, for not more than three consecutive periods of fourteen days. An interval of four weeks will then follow, during which no mercury is to be given. The treatment may then be resumed."

The following table, abbreviated from the report, shows the remarkable diminution of syphilis in the Egyptian army:—

Year.	Primary Syphilis.		Secondary Syphilis.	
	Admissions. Ratio per 1000.	Average constantly Sick. Ratio per 1000.	Admissions. Ratio per 1000.	Average constantly Sick. Ratio per 1000.
1896	79·9	7·00	53·1	5·66
1897	27·9	3·31	51·7	6·46
1898	46·6	4·57	45·0	4·38
1899	35·4	4·10	30·82	2·27
1900	8·5	·86	12·7	1·15
1901[1]	4·73	·45	19·0	1·81

[1] To 31st October 1901.

The extraordinary diminution in the number of admissions for primary syphilis, Col. Fawcett ascribes to three factors:—(1) That the ravages of secondary syphilis in the force were very much modified by the treatment, and there were therefore very few diseased men capable of infecting those prostitutes with whom their comrades habitually consort; (2) that the diagnosis was much more accurate, no case being entered unless there was undoubted evidence of an infective sore; and (3) that in March 1900 the 3rd Battalion Seaforth Highlanders arrived at Cairo. "This militia battalion . . . is remarkable for its exceptionally good conduct; and there were only three admissions for primary syphilis from this battalion, with an average annual strength of 602 men."

The number of men under observation and treatment during the year was 107, and they had an average of twenty injections per man. There is no unwillingness on the part of the men to undergo the treatment. The injections are made into the upper part of the gluteus maximus. A slight painless swelling may persist at the site of injection for a week or ten days, but there is no other local effect. The man is able to continue on duty throughout the treatment. In a few cases, symptoms of mercurial poisoning ensued. This was met by diminishing the maximum dose from 10 to 5 minims. Early in 1901 a careful inspection of the British force in Egypt (some 4000 men) showed that there were only two men unfit for active service on account of secondary syphilis—a condition of things which may be considered unprecedented in the British army. In only one case, during two years' experience, did the continuous treatment fail to affect the course of the disease.

WOUNDS OF THE CERVICAL PORTION OF THE THORACIC DUCT.

CONTRARY to what is generally believed, Veau states (*Gaz. d. hôp.*, Paris, Oct. 30, 1902) that this accident is not a serious one, and that it is comparatively common. The cervical portion of the thoracic duct is almost always wounded by the knife of the surgeon. Only one case is on record in which the injury was due to a stab wound. The accident has most frequently happened during the excision of tuberculous and malignant glands, but has also occurred during the removal of a branchial cyst, in the course of ligaturing the sub-clavian artery, in excision of sarcoma of the neck, and in removal of a fibrous tumour of the thyroid body. It occurs, of course, only during operations on the right side of the neck. The author says that "most observations come from England and America, probably because surgeons there are more audacious"!

Signs that the duct has been wounded may appear immediately after the injury is inflicted, or not till some time later. In the first case the surgeon recognises that he has damaged the duct, by the fact that the wound is suddenly flooded with a white milky fluid, which rapidly oozes from the opening made in the tube, either in a continuous stream or with a respiratory rhythm. In other cases nothing unusual is noticed during the operation, and it is only when the wound comes to be dressed that it is discovered that the lymph is escaping.

In some instances the milky fluid escapes from the wound, and, in the course of a few hours, soaks the dressings; in others, it collects under the skin, forming a soft, fluid, fluctuating swelling. This may be mistaken for serum or extravasated blood, until on separating the edges of the wound its nature is revealed. In some recorded cases it was six or eight days before the fluid escaped.

The fluid which escapes has the appearance of milk diluted with water, and its colour varies with the state of digestion. It has a sweet, mawkish odour, similar to that of serum. It is generally viscous, and coagulates almost immediately on escaping. The quantity varies from a few grammes to as much as six litres a day. The effect on the general health of the patient is very serious. Rapid and marked emaciation takes place from loss of the fluid, there is distressing thirst, and the quantity of urine passed is diminished. The patient feels feeble, ill, and faint. There are sometimes head symptoms.

As a rule, the quantity of fluid escaping diminishes within a week, and it usually ceases suddenly. The patient then rapidly improves in health, puts on weight, and soon regains strength. In one case the gain in weight was at the rate of a pound a day. Sometimes a fistula persists for some time, but eventually heals spontaneously.

The best treatment is by pressure, applied by means of a graduated compress directly over the opening in the duct. On no account should the wound be drained, as this merely promotes the flow and favours the formation of a fistula. When the fluid collects under the skin, a firm pad should be applied in the supra-clavicular fossa, and pressure exerted through it by means of a bandage. Forcipressure has been useful in some cases, and in others the vessel has been ligatured. Lateral suture has been successfully employed in spite of the thin and fragile nature of the duct. Even when the lumen of the duct is occluded, the collateral vessels are sufficient to maintain the flow.

Primary Tuberculosis of the Parotid Gland.

In reporting a case of primary tuberculosis of the parotid gland, Frank (*Ann. Surg.*, Philadelphia, December 1902) comments on the apparent rarity of this condition. His case he believes to be the first recorded by an American surgeon. Infection may take place from the mouth, along Stenson's duct; from a carious tooth, by way of the lymphatics; or through the blood stream. Two forms are recognised: the *diffuse*, in which numerous small tuberculous foci are scattered through the gland, which is œdematous and friable; and the *circumscribed*, which is the more rare form, and in which a cold abscess or "tuberculous cyst" develops. The disease, which runs a slow course, begins by swelling of the parotid, and later the skin becomes adherent, red, and œdematous: on making pressure over the swelling, pus may escape into the mouth. There is seldom any enlargement of the glands of the neck. The disease must be diagnosed from syphilitic enlargement, interstitial parotitis, and a malignant tumour. In nearly all the recorded cases, the diagnosis has only been made by microscopic examination of the tissue removed by operation. Some help may be obtained by examination of the parotid secretion. Removal of the diseased tissue has usually resulted in permanent cure. Temporary facial paralysis has ensued in some cases.

OBSTETRICS AND GYNÆCOLOGY.

UNDER THE CHARGE OF

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GENITAL TUBERCULOSIS.

GENITAL TUBERCULOSIS (*Centralbl. f. Gynäk.*, Leipzig, No. 45, 1902) was discussed at the Gynæcological Congress. Martin stated that the condition is not so rare as is generally supposed. It was most frequently secondary to tubercle elsewhere, and the infection was a descending one, frequently from the intestine, directly or indirectly through the glands or peritoneum. It occurred either in patches with healthy tissue between, or in a continuous form. No symptom was pathognomonic of the condition, and certainly in diagnosis could only be obtained by demonstrating the presence of the tubercle bacillus. He recommended operation only when the affection was localised. Veit likewise agreed that radical operation was the best treatment when the tuberculous condition was localised. In palliative treatment iodoform was the best drug. Amann believed that the condition is always secondary to tubercle in the lungs. The Fallopian tubes are first and most intensely affected. Fauer had seen seven cases, and, in all, the pelvic peritoneum participated in the disease. In tubal tuberculosis the apparently healthy uterus should be removed at the same time. Spinelli observed thirty-one cases, and concluded that most cases of tuberculous peritonitis were of genital origin. He favours Durante's method of iodine injections in all cases. Fargas believes that the ascitic fluid in tuberculous peritonitis has an antitoxic power over Koch's bacillus. Gottschalk, by a series of microscopic preparations, demonstrated that tuberculosis may be localised in the deep parts of the uterine parietes and surrounded by healthy muscular tissue.

Iruzzi advocated culture tests of the uterine secretion, as giving better results than histological examination. He pointed out the advantages he had found from washing out the peritoneal cavity with a weak solution of formalin, when performing laparotomy for peritoneal tuberculosis.

RECURRENT RUPTURE OF THE UTERUS.

MIKHINE (*Ann. de gynéc.*, Paris, May 1902) reports the following case of this very unusual condition:—Patient, æt. 33, 5-para., had two still-born children, and one died soon after birth. The pelvis was generally contracted. The fifth confinement was terminated by craniotomy. This was followed by an extra-peritoneal rupture in the upper part of the cervix, which healed spontaneously. At the next labour, eighteen months later, labour was induced shortly before full time, to avoid the difficulties experienced in former confinements. This, however, was undertaken too late, and Cæsarean section was decided upon. During the preparations for this operation the uterus ruptured, the child escaping into the peritoneal cavity. The case was successfully treated by Porro's operation. The rupture involved the anterior portion of the lower uterine segment. Microscopic examination of the uterus gave negative results.

OVARIAN PREGNANCY.

THOMSON (*Am. Gynec.*, N.Y., July 1902) discusses the theories which have been brought forward for and against the possibility of ovarian pregnancy. After referring to Van Tussenbrock's classical case, he reports the following apparently unique case. Patient, æt 32, 2-para.; no miscarriages; gave history of chronic pelvic pain; menstruation regular. When seen three days before a menstrual period, she complained of continuous pain of one month's duration. Tenderness and an ill-defined swelling were made out in the left fornix. *Exploratory abdominal section.*—On drawing up the appendages on the left side, the ovary was found enlarged, and on its inner and upper border was a red swelling the size of a chestnut. No rupture had taken place previous to operation. At the base of the tumour there was seen a small opening, evidently the follicle, which had ruptured with the menstrual period one week before operation. There were delicate adhesions round the ovary, but the fimbriated end of the tube did not spread over its surface. On opening the tumour, a fœtus (reckoned about 25 days old) was found fixed to the wall of the ovisac by a cord 1·5 cm. in length. No trace of amnion could be found. The base of the tumour projected into the ovarian substance, and its upper part bulged beyond the surface of the surrounding ovarian tissue. The chorion covered the entire wall of the ovisac, sending folds deeply into its substance. No trace of decidual tissue could be found in any of the numerous sections made. The case is interesting from there being a pregnancy, recently ruptured Graaffian follicle and corpus luteum in one ovary.

MYOMECTOMY *versus* HYSTERECTOMY.

M'COSH (*Med. News*, Phila., September 1902) considers that, in young women with uterine fibroids demanding removal, myomectomy should be the operation employed if possible. For the safe performance of myomectomy the strictest asepsis is necessary, otherwise it becomes a most dangerous operation. In the operation, fear of hæmorrhage should be neglected, and bold and rapid methods be adopted. The results, as regards menstruation, pain, and pregnancy, are good.

PREGNANCY AFTER REMOVAL OF BOTH OVARIES.

BALDWIN (*Am. Journ. Obst.*, N.Y., December 1902) publishes a report on such a case, where both ovaries had been removed for ovarian disease. Since the operation the patient has been delivered of two children. In another case, operation was decided on owing to the patient suffering from severe pain at the menstrual period, together with metrorrhagia. Both ovaries and tubes were removed. Recovery from the operation was uneventful, but pain and metrorrhagia continued as before. About a year after the operation, careful examination revealed the presence of a small mass of tissue to the left of the uterus. This body was very tender, and on pressure produced on the patient such a sensation as pressure on an ovary gives rise to. The abdomen was opened, and this small mass, which lay between the layers of the broad ligament, was easily identified and removed. It was about the size and shape of a bean, and presented all the characteristics of ovarian tissue. As a result of this operation, the patient's condition was immensely improved, but menstruation still continues. This case seems to prove that a third ovary may be present—a condition which Bland Sutton, in his "Surgical Diseases of the Ovaries," regards as being improbable.

THE TREATMENT OF INOPERABLE UTERINE AND VAGINAL CANCER.

MEINERT (*München. med. Wchnschr.*, 1902, No. 39), in cases of inoperable cancer of those parts, uses as a cautery equal parts of chloride of zinc and starch (Canquoin mixture), and has obtained very satisfactory results. No cure has accrued in his practice, but the disease has been temporarily arrested, and the area has become completely shut off from the outer air by a firm and extensive vaginal cicatrix.

If freshly prepared paste in a gauze bag, supported by a wet alkaline plug, was left in position from seven to twelve days, a firm cauterisation scab usually came away, and, under daily irrigation, the raw vagina became accluded from within outwards. This treatment can only be used in cases where menstruation has ceased. Morphia is required to subdue the pain during the application of the escharotic body.

THERAPEUTICS.

UNDER THE CHARGE OF

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SERUM TREATMENT OF SCARLET FEVER.

IF a patient suffering from diphtheria becomes infected with scarlet fever, the Klebs-Löffler bacilli disappear from the throat and become replaced by streptococci. Since making this observation in 1891, Baginsky has systematically investigated 701 cases of scarlet fever. In only five cases did streptococci fail. In a series of 100 fatal cases the streptococci could be demonstrated in internal organs, especially heart-blood and marrow. The streptococci occur in chains, and are usually associated with other organisms, especially staphylococci and diplococci. There is nothing specific in the character of the cultures. Baginsky is convinced that there is an etiological connection between the germs and the disease. He has therefore experimented with anti-streptococcic serum. Marmorek's serum proved useless. Aronson prepared a special serum for scarlet fever, using streptococci obtained from fatal cases. Scarlet fever varies very much in its mortality, and great care must be exercised in estimating the value of a new treatment. In his own experience Baginsky finds the mortality has varied from 12 to 34 per cent. Simultaneously, sixty cases of scarlet fever were treated without serum, and sixty-two with serum. In the former the mortality was 14·3 per cent., in the latter 11·3 per cent. On the whole, the impression made on Baginsky was unfavourable to the serum. Neither on the general condition nor on any individual symptom was the effect marked. There was no critical fall of temperature. In many cases the temperature became irregular. The rash faded in from nine to fifteen days. Pharyngeal signs disappeared at varying periods. Desquamation began in from fourteen to sixteen to twenty-one days. Complications were fairly numerous. Strictly speaking, the course of the disease was, if anything, slightly prolonged. In four cases, which are fully reported, the disease became distinctly worse under massive doses of serum. In one case 6 × 20 c.c. of serum caused no lowering of temperature or mitigation of symptoms, while albuminuria, swelling of the liver and spleen, joint affections, injection rash, and infiltrations in the skin, occurred. In other two cases a whole series of similar complications arose. In the fourth case there was, in addition, urethritis, cystitis, endocarditis, and enteritis membranacea. Impressed by these unfavourable cases, though they all recovered, Baginsky stopped using this serum. Recently he has tried a new improved serum made by Aronson. This new serum causes no unpleasant effects. It is more reliable; but even it has not the rapid effect of the diphtheria antitoxin, its action being much slower, but still progressive. Aronson's new serum differs from the "Moser" serum, in that the former has the virulence exalted by first passing through animals before being injected into horses, while the latter is injected directly without preliminary exaltation of virulence. Possibly the fact may explain the difference in action. Baginsky concludes that the new Aronson serum should be further investigated. —*Berl. klin. Wchnschr.*, 1902, Nos. 48 and 49.

AGURIN: A SUBSTITUTE FOR DIURETIN.

AGURIN, a combination of theobromin and sodium acetate, is a white powder, freely soluble in water. It is slightly alkaline in reaction, with a bitter salt taste. It contains 60 per cent. of theobromin, and is best administered in powder or cachet. Acids are incompatible, precipitating the theobromin partially in an insoluble form. The preparation must be kept dry, and protected from the light. In healthy people agurin causes a slight transient diuresis. In cases of heart disease, chronic interstitial nephritis, cirrhosis of the liver, and in chronic pleurisy, Tausz has found the drug an excellent and reliable diuretic. In cardiac cases the diuresis shows itself usually on the following day, reaching a maximum in two to four days, and gradually falling with the disappearance of the dropsy. A similar effect is seen in chronic nephritis. A directly irritant action on the kidneys was not observed. In a case of interstitial hepatitis the urine rose from 750 c.c. to 3720 c.c. In pleuritic exudations the increase runs from 500 c.c. to 6000 c.c. in the daily amount. Former investigators put the increase at 100 per cent., but Tausz considers this too low, and the maximum effect is usually 400 or 500 per cent. This maximal effect is rapidly obtained, afterwards there is a gradual fall. The diuresis persists, as a rule, for four or five days after the drug is stopped. Tausz claims that the drug is an excellent remedy for anginous attacks of organic origin. It is useless for neurasthenic anginous attacks. In true angina it rapidly cuts short the most severe pain in doses of 2 grms., while a daily dose of 1 to 1½ grms. acts as an effective preventative of anginous attacks. The best diuretic dose is 1 grm. thrice daily. Agurin is better borne than diuretin. In a few cases it caused nausea, and in one case vomiting. In several cases where diuretin could not be tolerated, agurin was easily taken (*Klin. therap. Wchnschr.*, Wien, No. 38, 1902).

In the *München. med. Wchnschr.*, 1902, No. 51, Nusch reports very favourably of the same drug in cardiac œdema and pleural effusions. He finds the drug acts well with digitalis, and, like Tausz, he considers that the drug is better borne than diuretin. Agurin is somewhat dearer than diuretin, but the dose being smaller equalises the price.

ACUTE MERCURIALISM FROM TATTOO MARKS.

DESCHAMPS, in the *Arch. méd. Belge*, Bruxelles, for November 1902, reports an extraordinary accident that happened to a man who was extensively tattooed on the arms with figures in red and black. Black is obtained by using powdered carbon, and red by the use of vermilion, a sulphide of mercury. In washing a store, the man made use of a solution of soap powder consisting chiefly of sodium carbonate and caustic soda. Towards evening there was malaise, with pain and swelling in the red patches. Next day there was a papular eruption in the arms, which spread gradually all over the skin. Then the patient complained of headache, backache, vomiting, and biliousness, with fever. The red patches suppurated and ulcerated. The breath became fœtid, and salivation and stomatitis set in. Deschamps thinks that the alkaline solution converted the sulphide of mercury into a soluble salt, which first caused local caustic action, and, on absorption, acute mercurial poisoning. After the symptoms passed off, it was found that the black marks persisted, but the red marks had been replaced by cicatricial tissue.

ANTIVENINE IN COBRA POISONING.

CARR-WHITE has performed a number of experiments on dogs in order to test the efficacy of antivenine against the bite of the black Indian cobra. The antivenine was obtained from Calmette, in Lille. Some of it was old, but in other cases the remedy was used in as fresh a condition as it can be obtained in India. In no case was local treatment used, as ligature, excision, caustics, etc. Though the antivenine was injected immediately after the bite, in no case was there the least benefit noted. As soon as the cobra poison began to act, the symptoms followed in the same regular sequence till death. On no occasion was there even any temporary improvement. The dose injected varied from 7 c.c. to 60 c.c., and in one case 20 c.c. was given before the dog was bitten, but in no case was death postponed, controls and injected dogs dying alike within an hour.—*Indian Med. Gaz.*, Calcutta, November 1902.

ANTITYPHOID SERUM.

CHANTEMESSE shows that in Paris hospitals using the ordinary bath treatment the mortality of typhoid fever is 19·3 per cent., and that the mortality has always remained above 12 per cent. in any large series of cases. On the other hand, in a series of 186 cases treated by similar methods, but with serum in addition, the mortality was only 3·7 per cent. This improvement Chantemesse believes to be due to the antityphoid serum. Analysing the seven fatal cases, he shows that three of them were due to intestinal perforation. In addition, there were two other cases of perforation in his series which were successfully operated on. The serum does not reduce the percentage of perforations in those who are not injected before the eighth day of illness. On the other hand, earlier treatment apparently reduces the risk of perforation occurring, as in a series of 151 cases treated with earlier injection only one perforation occurred. In all, about 500 cases have been treated with serum, with a mortality of 6 per cent., comparing favourably with the mortality of 9·5 for the German army. One of the most evident effects of the serum is the rapid cure of certain local complications, such as periostitis. In studying the effect of the disease, we must distinguish between infection due to the bacilli and the intoxication due to their soluble toxines. If bacilli are injected into a rabbit's ear, they grow and multiply locally, almost as if in a culture medium. If the rabbit gets a preliminary dose of serum, the immense majority of the germs become englobed by the phagocytes, and are rapidly destroyed. Thus the serum has an anti-infectious effect by acting on the phagocytes. It also has an antitoxic effect. If a dose of typhoid toxine just under the lethal amount be injected, the rabbit in a few hours emaciates, and in the blood the white cells (chiefly polynuclear) are much diminished. The animal only gradually recovers. If the same amount of toxine be injected in a rabbit which has from two to twenty-four hours previously received an injection of serum, the emaciation is much less, and the destruction of leucocytes is minimal. If serum and toxine are injected separately or together, the toxic effect on the blood is almost as great as if the toxine had been injected alone, but the leucocytic defensive reaction is much more active and intense than in animals without serum. If the injection of serum be made too late, and if the infection is severe, the defensive reaction does not occur. The effect of the injection persists for several days. Hence the injection of serum should be made as soon as possible, and the doses should not be frequently repeated. The effect of the serum is well marked on the spleen and marrow. In animals, after giving toxine, the marrow becomes markedly congested in a few hours, while animals which have received toxine and serum show equal swelling of the spleen and marrow, but in this case the tumefaction is due to an enormous hypertrophy of the lymphoid and myeloid tissue. In the spleen the Malpighian corpuscles are increased in size, and contain lymphocytes. The fat is absorbed, and the medullary spaces are full of young cells containing basophil granules. Experimental work shows, then, that the antityphoid serum acts directly on the living virus, rendering it most susceptible to the action of the cells, and also by helping to destroy the toxine. Indirectly it increases the activity of the phagocytes and of the phagocyte-forming tissues. This is the chief action of the serum, and in order to obtain it these tissues must not be so profoundly poisoned as to be incapable of responding to the stimulus, hence the necessity of early injection. In cases of severe poisoning, small doses only should be given. The more profound the intoxication the smaller should be the dose. With severe nervous implication, or where the fever has already lasted a long time, a rapid cure should not be attempted; but by a small dose one tries to increase the resisting forces, and thus tide over the dangerous period.—*Presse méd.*, Paris, December 24, 1902.

MEDICAL JURISPRUDENCE.

UNDER THE CHARGE OF

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The Purity of Re-Agents in Testing for Arsenic.

Since the arsenic in beer scare of 1900, various methods, chiefly modifications of known processes, have been devised for the detection and estimation of minute quantities of arsenic in beer, malt, and other articles of food.

A Joint Committee of the Society of Chemical Industry and the Society of Public Analysts was formed in order to devise a standard or official method of testing for and estimating arsenic, and this Committee subsequently published a valuable report upon the subject.

A paper by Mr. William Thomson, F.I.C., contained in the *Med. Chron.*, Manchester, Oct. 1902, criticises this report, and is well worth perusal by those interested in the chemical processes for the detection and estimation of arsenic.

Of special interest are the author's remarks in regard to the purity of hydrochloric and sulphuric acids, and the zinc used in connection with such processes.

In regard to hydrochloric acid he states: "I agree that the acid sold as pure, nearly always, if not always, contains arsenic. . . . My method of purifying hydrochloric acid is a very simple one. I do not require to use the purest acid which can be bought, to start with. I simply dilute strong acid of any kind with about one-third its volume of water, although the dilution is not necessary. I put it in a retort, add to it about 1 grm. per litre of chromic acid, and distil. By preference I use a large stoppered glass flask placed on a sand bath, a tube, from the neck of which enters a Liebig's condenser, glass touching glass, and the distillate is collected. It is, however, saturated with chlorine. I then pass a current of filtered air through the distillate, say half a gallon, for about two hours, by means of a water vacuum pump, when every trace of chlorine is removed, and no trace of arsenic will be found in the distillate."

In regard to sulphuric acid, Thomson disagrees with the Joint Committee when they say that sulphuric acid is more frequently obtained arsenic-free than hydrochloric acid. He could not obtain a single sample which was entirely free from arsenic. His method of purifying it is stated to be simpler than that recommended by the Committee, and is as follows:—

Into a non-tubulated retort he puts the sulphuric acid, previously mixed with about a gramme to the litre of chromic acid or potassium permanganate. He then distils and collects the distillate, which is free from any trace of arsenic or from sulphurous acid.

Zinc also, in contradistinction to the Joint Committee, he found great difficulty in obtaining arsenic-free. Samples of electrolytic zinc were found free from arsenic, but were contaminated with iron to such an extent as to be useless. "If, however, this zinc be treated with acid, some pieces, especially those which have granulated in button form, produce rapid effervescence, and become black on the surface from the formation of a deposit of metallic iron, whilst other parts, especially those which are most feathery, yield very little effervescence, and it is easy thus to pick out the good from the bad. The feathery pieces, being usually free from both arsenic and iron, are suitable for the Marsh test."

A CASE OF POISONING WITH CHERRY-LAUREL WATER.

POISONING with this substance is very rare, and the following case recorded by Wachholz (*Friedrich's Bl. f. gerichtl. Med.*, Nurnb., Heft 4, 1902) is interesting. A man, æt. 28, was found by a friend lying on a sofa, unconscious and breathing stertorously, at 7 p.m. The friend had seen him alive and well at 2 p.m. A letter lay on a table, stating that he had taken cherry-laurel water, and near at hand there was a one-litre bottle which contained about 300 grms. of a watery fluid, smelling strongly of bitter almonds. In spite of immediate medical assistance, the man died at 8·30 p.m., or six and a half hours after he was last seen alive. At the post-mortem examination the hypostatic lividity was well marked, and presented no unusual colour. There was a strong odour of bitter almonds in the cranial cavity and in the stomach, the mucous membrane of which is described as being of a light red colour, but not swollen, eroded, or ecchymosed. The blood throughout the body was of the ordinary colour, with the exception of that in the venous sinuses of the brain. None of the other organs or tissues of the body presented any characteristic or special appearance. On preparing a solution of methæmoglobin from blood taken from another body, and adding to this a few drops of the distillate from the stomach contents, its brown colour was at once turned into a light red, and, when examined with the spectroscope, showed the spectrum similar to hæmoglobin, and called by Kobert cyanmethæmoglobin. The points of interest in the case are—first, the amount of the poison proved to have been imbibed, namely, 700 grms., although, judging from the amount of fluid found in the stomach (about ½ litre), and its strong odour of bitter almonds, all of this had not been absorbed; secondly, the length of time the patient lived after he was found unconscious; and, lastly, the fact that the blood, with the exception of that in the venous sinuses of the brain, did not show the light red colour described by many as characteristic of HCn poisoning. The author concludes the account of the above case with a discussion of the compounds formed between HCn and the blood, and upholds his own view, that, in addition to the formation of cyanhæmatin, HCn also combines with methæmoglobin, as was stated by Kobert in 1891.

A PECULIAR EFFECT PRODUCED BY INSECTS UPON THE DEAD BODY.

HOROSZKIEWICZ records a case in which the body of a child was examined, owing to death having occurred from unknown causes. The external examination disclosed a number of excoriations of the cuticle in various parts, especially on the face, neck, inguinal regions, genital organs, and perineum. These injuries were irregular in shape, brown and parchment-like in appearance, and showed no signs of a vital reaction.

Internally, no injuries were found, but there was acute capillary bronchitis and a chronic enteritis. These latter conditions sufficiently accounted for the death, but difficulty arose as to the origin of the external injuries. These might have been the result of an attempted rape and manual strangulation, since crimes of the former description are not infrequently perpetrated on young children. Against this view, however, was the fact that the injuries showed no indication of having been produced during life. On making further inquiries, the mother of the child stated that she left the dead body lying on the floor on a straw mattress while she went to make arrangements for the funeral, and that, when she came back, she saw the body covered, as she thought, with a black cloth. On closer inspection, she found that this black covering consisted of an enormous number of black beetles. She attributed the injuries to this circumstance, and the question therefore arose whether black beetles could produce the appearances found on the body. In order to determine this point, Horoszkiewicz took a piece of skin from another body and put it into a bottle along with some of the beetles from the house in question. The beetles at once attacked the skin with avidity. After a time, on removing the skin no injuries were at first noticed, but later on an exactly similar condition to that found on the child's body was noticed when those portions of the skin where the beetles had attacked and destroyed the epidermis became dry. The author found two somewhat similar cases recorded, in both of which the appearances gave rise to great suspicion; in fact, in one of them, it was thought that the condition had been caused by sulphuric acid, and the father of the child was accordingly arrested. Only after the case had been the subject of several judicial investigations was the accused set at liberty, without, however, the real cause of the suspicious marks being discovered.—*Vrtljschr. f. gerichtl. Med.*, Berlin, Bd. xxiii. S. 2.

DISEASES OF THE EAR, NOSE, AND THROAT.

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The Detection of Foreign Bodies in the Œsophagus and Upper Air Passages.

Considerable progress has been made during the last few years, both in the diagnosis and treatment of foreign bodies in the œsophagus and respiratory passages,—mainly, however, in the direction of diagnosis. This improvement is largely due to the application of the Röntgen rays for the detection of foreign bodies, and to the introduction of apparatus which will permit the surgeon to determine by direct inspection the site and the form of the body in question. In this latter connection we refer to the methods known as œsophagoscopy and bronchoscopy. Lastly, by the use of the electro-magnet, additional means may be at hand to enable us to withdraw from these passages metallic bodies having magnetic properties.

In view of the importance of this subject, a discussion was held in the Section of Laryngology at the Annual Meeting of the British Medical Association, which met in Manchester in July 1902 (*Brit. Med. Journ.*, London, August 30, 1902). An account of the application of the X-rays to this department of surgery was placed in the hands of Dr. John Macintyre, who dealt not only with this, but also with the use of the electro-magnet, to which we will refer later. In his opinion, skiagraphy is of very great value in the detection of foreign bodies, and he is inclined to doubt whether it has been fully appreciated. It is true that here, as in other branches of surgery, the method has its limitations: the foreign body may not be one which can be detected by the rays, and there are situations in which the anatomical relations of the parts prevent accurate localisation by such means. Nevertheless, there are occasions when nothing else will reveal the presence of the body; and again, in combination with other appliances, it may render valuable assistance in diagnosis. Macintyre points out that very small bodies, whether lying in deep cavities or buried in the tissues, may be detected by the rays, when other means of diagnosis prove useless. It is necessary, however, that the observer should be thoroughly conversant with the normal appearance of the parts seen on the screen or on the negative, as well as with possible pathological conditions. He must further recognise the various shades of density that bone, cartilage, or muscle may produce when the rays are directed upon the tissues. The apparatus used should be of the very best, so that the best possible results may be obtained by it; and the surgeon should frequently train his powers of observation in normal conditions.

While it is undoubtedly true that very useful information may be thus obtained, one must not forget that this method may fail where one might least expect it to do so. The following case, recorded by Wild of Zurich, is a good example of this. A man was admitted to hospital with a history of having swallowed his tooth-plate. The X-rays were applied, but neither upon the screen nor on a photographic plate was any abnormal shadow detected. The plate was of large size, measuring 5 by 2½ cms., yet, notwithstanding this, the rays failed to show its presence. It was, however, revealed by bronchoscopy, lying in the left main bronchus.

Œsophagoscopy and Bronchoscopy must now be referred to. In the discussion at Manchester just referred to, Killian of Freiburg again brought these methods under review, and demonstrated their application upon the living subject. Dealing first with œsophagoscopy, he indicated how the gullet could be systematically searched, and the exact position, size, and shape of the foreign body thus ascertained. At the same time, it was possible to observe whether the œsophagus was inflamed, or if the coats of the gullet had been injured by the body or by any previous attempts to effect its removal. Not only can inspection be made along these lines, but, by the introduction of suitable instruments through the metallic tube, the foreign body can be removed either through the œsophagoscope, or, if too large, be withdrawn along with the tube. By direct inspection in this way, one can also determine whether any attempt at removal would be a source of danger to the œsophagus by tearing its coats. Consequently it is also a guide as to whether œsophagotomy or gastrotomy ought to be performed.

The same principle which lies at the foundation of œsophagoscopy has found more recent application in the examination of the trachea and bronchi. Direct examination of the trachea may be made by drawing the epiglottis forwards by pressure on the tongue with one of the spatulas introduced by Kirstein. The reflex produced by such an examination, however, is very considerable, and the cases are indeed exceptional in which more than only a partial view of the larynx can be obtained. Killian therefore prefers the tracheal tube introduced from the mouth through the rima glottidis.

In performing direct upper tracheoscopy, Killian passes the tube under the guidance of the eye, looking continuously through it, and thus watching its progress from the time it is introduced into the mouth until the end reaches the trachea. Foreign bodies are thus discovered, and extracted by means of special forceps. Sometimes a freely movable body is blown against the lower end of the tube, thus obstructing it, and tending to produce a suffocative attack. By pressing the body down, breathing may again be restored. In cases where tracheotomy has been found necessary, and where the foreign body has not been coughed up, lower direct tracheoscopy may be carried out, *i.e.* the introduction of the tube through the tracheotomy wound.

If the body has been sucked into the bronchi just beyond the bifurcation of the trachea, the tracheoscopy tubes suffice both for diagnosis and extraction. If, however, the body lies deeper down, longer tubes are introduced into the bronchi. Killian states that the bronchi, which are highly elastic and embedded in soft tissue, may be pressed by the metallic tube, without fear, into the median plane, so that the trachea, the larger bronchus and its branch, are brought into one straight line.

Bronchoscopy allows the whole bronchial tree to be searched; and even the left principal bronchus, which branches off at a sharper angle laterally than the right, can be gently pressed and brought into as clear a view as the right one. During the examination the field must be kept clear by mopping the secretion, the sponges being fixed upon long handles: by the use of a small suction pump the same end may be attained. The difficulty which is apt to arise is, that the foreign body may be sucked into the lower open end of the bronchoscopy tube, with the result that very considerable respiratory difficulty may arise. In order to diminish the discomfort and inconvenience thus produced, the tube should be provided with an opening at some little distance from its lower end.

Up to the time of the publication of Killian's recent paper, bronchoscopy had been employed in twenty cases. Of these, eleven occurred in his own practice. Nearly one-half of all the patients were children: six of these were between the ages of 2 to 6 years, while four were between 8 and 12 years. The foreign bodies were of the most varied character. In one-half of the cases they had been inspired a few days before coming under treatment; in the other half the bodies had been in the lung for months or years. In nine out of eleven cases in which upper bronchoscopy was employed, a correct diagnosis was made. It failed in the other two: in one, because the foreign body consisted of fine downy feathers, too small to be seen; in the other, a large pin with a glass head, which had been inspired some years previously, had become imbedded in what was probably fibrous tissue. In nine cases in which lower bronchoscopy was employed the diagnosis was established. In two cases it was proved with certainty that the suspicion of a foreign body in the lung was unfounded.

Extraction was attempted in fifteen cases, and succeeded eight times with upper, five times with lower, bronchoscopy. In two cases—one recorded by Thost, the other by Spiess—removal was unsuccessful: in one, because suitable instruments were not at hand; in the other, owing to the fact that the foreign body lay in an abscess cavity with a narrow opening. Both these patients died. Of the patients in whom extraction was successful, one died, nine months after the operation, from purulent pleurisy. The foreign body had lain for five months in the left principal bronchus, and considerable stenosis existed at the site.

It will not be out of place to note here certain points in the technique of the operation. It must be evident to all that considerable skill is required in the manipulation, and that experience is necessary for carrying out the procedure with success. Good illumination is essential; and for this purpose the electric light, attached to a foreign band and condensed by a lens, serves the purpose of illuminating the tubes. The latter are fixed to a handle similar to that employed in Kirstein's direct laryngoscopy. The patient may be given a general anæsthetic, or the local application of cocaine may be quite sufficient. For this purpose the pharynx and larynx are painted twice over with a 20 per cent. aqueous solution, or a 25 per cent. alcoholic solution of cocaine. Excitable patients are given a hypodermic injection of morphia twenty minutes before the examination is commenced. Under cocaine, the tube may be passed, with the patient in the sitting posture. With the upper part of the trunk thrown forwards, the shoulders braced back, and the head held backwards, the tube is passed through the mouth under good illumination. In carrying out upper direct tracheoscopy in adults, tubes varying from 15 to 20 cm. in length and 9 to 11 mm. in width are used; in children, on the other hand, the tubes vary from 10 to 15 cm. in length and 5 to 7 mm. in width. Under the guidance of the eye, first the epiglottis and then the interarytenoid region is brought into view, and finally the posterior ends of the vocal cords. If general anæsthesia be employed, as in children, the patient is placed in the horizontal position, with the head hanging over the end of the table. When the lower direct tracheoscopy is carried out, that is, through a tracheotomy wound, cocainisation of the trachea suffices. In this instance wider tubes may be employed, *e.g.* 14 mm. wide and 5 to 15 cm. in length. The whole of the trachea, the bifurcation, and the entrance to the main bronchi become clearly visible. If lower direct bronchoscopy is desired, the bronchi are painted with a 10 to 20 per cent. cocaine, but in the case of the left bronchus this cannot be done until the tube is passed down to its entrance. The tube is passed 4 to 5 cm. along the main bronchus, and in this way the latter is straightened. Even bronchi of the second and third degree may be penetrated, and Killian has observed the branching of the main bronchus in the upper lobe of the lung. When upper direct bronchoscopy is attempted, thorough cocainisation may suffice in some adult patients, but in others and in children a general anæsthetic in addition must be administered. The length of the tubes is estimated by measuring from the upper incisors to the middle of the sternum—a distance measuring, as a rule, from 30 to 35 cm. in the adult, and from 15 to 25 cm. in infants. The tube, warmed and oiled, is passed in the median plane, and must enter the chink of the glottis during inspiration.

The use of the electro-magnet.—Our review of this subject would not be complete did we fail to draw attention to the possibility of extracting certain foreign bodies by means of magnetic attraction. Macintyre, in the discussion at Manchester, from which we have already quoted, draws attention to this method. He has already satisfied himself that, in the nose and naso-pharynx, it proves to be a useful means for the extraction of metallic bodies. Its application to the trachea and bronchi cannot be doubted in those cases in which tracheotomy has been performed, as shown in an interesting case reported by Garel of Lyons (*Ann. d. mal. de l'oreille et du larynx*, Paris, Feb. 1901). This writer records the history of a child, æt. 18 months, who swallowed a long nail, which had entered the right bronchus. It was not until two months after the accident that the child came under Garel's observation. Suspecting the presence of a foreign body, he applied the X-rays, and located the nail in the right bronchus, about the level of the sixth intercostal space. Tracheotomy was performed, and the point of an electro-magnet was brought to the tracheal opening, and the nail was at once dislodged from the tissue in which it was fixed, and flew to the magnet. The body, which measured 53 mm. in length, must have been situated no less than 6 cm. from the tracheal wound. Macintyre has constructed an instrument for use under similar circumstances. He points out that, in spite of the great power which such an instrument may possess, its influence diminishes greatly when it is applied to a small surface of metal. So, also, the further away the body is from the magnet, the less is its power of attraction. He also draws attention to the possibility of passing it over the surface of the chest, with a view to dislodging the foreign body and bringing it up to the region of the larynx. By retaining it there, and by introducing another magnet into the pharynx, he suggests that it might be possible to remove in this way a metallic body through the mouth. This subject remains as yet, however, a matter for speculation.

The question of removing certain magnetic metallic bodies in this way was first suggested by Roaldes of New Orleans; and this writer again returns to the subject in a paper read before the American Laryngological Association in 1901. For the purpose of testing the practical utility of such a method, he made a number of experiments upon the cadaver, introducing various foreign bodies into the tracheo-bronchial passages, and attempting to extract them by means of Haab's giant electro-magnet. The foreign bodies were placed in different situations in the nose and naso-pharynx, and all but two were extracted successfully by the aid of the magnet placed in front of the nares. Bodies placed in the larynx, whether above or below the vocal cords, resisted the attraction, although the magnet was placed in the mouth about 1½ in. from the teeth. Where bodies were placed in the trachea and bronchi, and a low tracheotomy performed, they were easily removed by the magnet placed on a level with the wound, and, in one case where it was held ¾ in. from it, failure ensued when the nail or button lay deeper than 5¼ in. from the tracheal incision; that is to say, in these cases, 2 in. below the bifurcation. In still another series of experiments the bodies were placed in the bronchi, and the magnet was laid externally against the thorax immediately over the situation of the body. The magnet was carried up to the tracheotomy wound, attracting the body with it, the latter passing up the anterior wall of the trachea, and emerging from the wound. An attempt to propel a button from the trachea through the larynx into the mouth proved a failure. A difficulty, therefore, appears to exist at the glottis, but, in addition to that, the angle between the mouth and the lower pharynx appears to provide yet another obstacle. The less the distance between the object and the magnet, and the more direct the line between the two, the more easily is the extraction carried out. It is possible that, by the employment of two magnets, greater success may yet be obtained. The body may be drawn as far as the larynx by one of them, while the second is inserted into the mouth, and further extraction effected by means of it. A combination of the magnet and upper direct bronchoscopy may yet form the ideal method of treatment in a class of metallic foreign bodies. The whole of this subject of extraction of bodies from the air-passages is full of interest, and time will show what further developments may yet take place in connection with it.

PUBLIC HEALTH.

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The Ventilation of Factories and Workshops.

The recently published "First Report of the Departmental Committee on the Ventilation of Factories and Workshops" contains some very interesting statistics and valuable information as to the condition of the ventilation of such places. The Committee consists of Dr. John S. Haldane and Mr. E. H. Osborn, engineering adviser to the Chief Inspector of Factories. The present report deals only with the subject of general ventilation; and the question of local ventilation, and the means of preventing injury to health by dust, fumes, etc., remains to be dealt with in a subsequent report.

Haldane (*Journ. Hyg.*, Cambridge, vol. ii. No. 4) gives an interesting account of his work in connection with the report. Every variety in size and construction of room was met with during the Committee's work,—from mere outhouses, such as are used by the hand file-cutters of Sheffield, to very large rooms, occupying the whole of a high building, with galleries running round inside. The means of heating also varied very greatly,—from gas stoves to systems in which steam and hot water were employed. In many instances the heating arrangements were inadequate for properly warming the apartments in cold weather; and in these circumstances gas-jets were lighted for the purpose of giving additional warmth—a most objectionable practice. The average cubic space per person in the rooms examined was 1875 cubic ft., or, if rooms with over 5000 cubic ft. be excluded, 925 cubic ft. per person, the minimum permitted by the Factory Act being 250 cubic ft. for each employee.

Throughout the inquiry the proportion of carbonic acid present in the air of the room under examination was taken as the index of the impurity of the atmosphere. A limited number of numerical determinations of the bacteria in the air were made, but are of comparatively little importance, as Dr. Haldane points out. The average amount of carbonic acid in the air of the rooms examined was 10·1 parts per 10,000 where no artificial lighting or only electric light was employed, and 17·6 parts per 10,000 where coal-gas was the illuminant. Almost all the analyses were made in winter, when ventilation is less free than in summer. The greatest proportion of carbonic acid found, without artificial lighting, was 46·2 parts per 10,000 in a cotton-spinning shed. There were nine workers in the shed, the cubic space per worker being 10,169 cubic ft., and no means of ventilation were in use at the time. The room was lighted by gas morning and evening. Most of the carbonic acid was undoubtedly produced by this means, and not removed by ventilation ; and Dr. Haldane points out the great advantage which would result from the more general use in factories lighted by gas, of incandescent mantles, not only in avoiding excessive vitiation of the air, but also from the point of view of economy and efficiency in lighting.

As to the influence of cubic space per person, the results show that a large cubic space per person does not in itself afford any guarantee of air purity. This is well seen in the case of the spinning-shed above referred to. In gas-lit rooms, with a large cubic space per person, it would appear as if there was a marked relative increase in the amount of carbonic acid present, due to the fact that the number of jets per person is in these, as a rule, much greater than in rooms having a small cubic space per person.

In most factories and workshops where ventilation by natural means is relied on, the ventilating openings are the windows, but in order to be effective they must be under the charge of a foreman, or other responsible person. They should open at as high a level as possible, so as to prevent draughts and allow the ready escape of heated air. They must also be capable of opening freely for use in summer. In large and crowded rooms it is almost impossible to secure purity of air without the assistance of fans, and, owing to the relatively large amount of cubic space per person in factories, and the active employment of these persons, the system of ventilation by fans can be readily carried out without draughts being felt. As instances of the efficiency of extractive ventilation by fans, two cases are cited. In a basement room in a London chocolate factory the average proportion of carbonic acid per 10,000 parts was 4·9, with 153 persons working, the cubic space per person being 380 cubic ft., the room being electrically lighted. In an overcrowded ordnance workshop, with 200 workers, each with only 155 cubic ft. of space, and nineteen gas-jets lit, the proportion of carbonic acid was 8·2 parts per 10,000.

As the result of all the experiments conducted during the course of the inquiry, Dr. Haldane considers that "the average proportion of carbonic acid is less than in many public buildings, and evidently the air of factories and workshops generally is not relatively so much vitiated by overcrowding as is sometimes supposed."

Section 7, par. 2, of the Factory and Workshops Act, 1901, gives power to the Secretary of State, by special order, to "prescribe a standard of sufficient ventilation for any class of factories or workshops." The

Committee, as the result of their investigations, recommend that the proportion of carbonic acid, at or about the breathing level, should not exceed 12 per 10,000 in daylight or with electric light, and, when gas is being burned, should not exceed 20 parts per 10,000. Exception is made "in cases where extra carbonic acid is produced in other ways than by respiration or combustion, as in breweries, etc." The reporters state that they have, as a rule, found employers, especially the larger ones, willing and anxious to secure efficient ventilation. The employers have in many cases done all in their power to provide the means, which are frequently improperly used owing to thoughtless objection on the part of some of the employees. They believe that the laying down of a legal standard of air purity would lead to the proper use of existing means of ventilation, prevent much wasteful expenditure on inefficient ventilators, etc., as it would supply a ready test of efficiency, and would be the means of bringing pressure to bear on negligent or backward employers of labour.

THE AIR OF BAKEHOUSES.

DR. NEWMAN (*Public Health*, London, December 1902) gives an abstract from a special report on "Bakehouses in Finsbury," containing some analyses of the air of under-ground bakehouses. These are of value, in view of the fact that under sec. 101 of the Factory Act of 1901 an under-ground bakehouse cannot be so used after 1st January 1904, unless certified by the District Council as being "suitable as regards construction, light, ventilation, and in all other respects." The air of the bakehouses was examined for carbonic acid, for temperature and degree of humidity, and bacteriologically by exposing agar plates. The carbonic acid determinations were carried out by Dr. Kear Colwell, the method of Pettenkofer being employed. The air of eight under-ground bakehouses was examined, giving a mean of 14·8 parts of carbonic acid per 10,000—the maximum amount being 17·5 and the minimum 12 parts per 10,000. The air of the single typical above-ground bakehouse examined gave 4·9 parts of carbonic acid per 10,000. The mean of six determinations of the street air outside the bakehouses examined gave 4·3 parts of carbonic acid per 10,000.

The amount of carbonic acid present in the air of these bakehouses is not higher than might reasonably be expected under the circumstances, the sources of carbonic acid being the respiration of the workers, the oven, gas-burners, and lastly, but by no means the least important, the fermentation of the dough. The necessity, however, for thorough ventilation is apparent, especially when one considers the product being manufactured and the lengthy working day of the bakers. The air of five bakehouses was examined bacteriologically. Four of these were typical under-ground premises, and the other a typical specimen of an above-ground bakehouse. Three agar plates were exposed in each case, one plate being placed on the floor, one on the table or kneading-trough, and the third on a shelf near the ceiling. The exposure was of thirty minutes duration, and the plates were in all cases incubated for twenty-two hours at 37° C. Dr. Newman, of course, does not claim that the method adopted gives an "adequate record of all the bacteria present," but that it merely gives a *comparative* idea as to the condition of the air as regards bacteria. The average number of bacteria falling on each 9·6 in. (mean of three plates) in under-ground bakehouses was 670, while in the above-ground bakehouse the number was 307. In the case of one under-ground bakehouse the mean number of micro-organisms per 9·6 in. was 680, while in the air of the open street adjoining the number was 160. The micro-organisms isolated included a variety of bacteria commonly found in polluted atmospheres, yeasts, moulds, and several chromogenic bacilli. Liquefying organisms were found on the plates exposed on the shelves. No pathogenic organisms were isolated.

REPORTS OF THE MEDICAL SOCIETIES.

EDINBURGH MEDICO-CHIRURGICAL SOCIETY.—*January* 21, 1903.—Sir **THOMAS R. FRASER**, President, in the chair.—Mr. **ALEXIS THOMSON** showed a patient in whom an ununited fracture of the tibia and fibula, unsuccessfully treated by wiring the fragments, was induced to unite by means of a rigid metal plate and series of screw-nails, embedded in the tissues for a period of eight months.—Dr. F. **GARDNER** showed for Dr. **NORMAN WALKER**—(1) A case of rodent ulcer; (2) two cases of lupus.—Mr. **STILES** showed—(1) A boy with extroversion of the bladder, in whom the ureters had been transplanted into the rectum after the method of Peters of Toronto; (2) a boy with diffuse nævo-lipomatosus.—Mr. **CATHCART** showed a patient after operation for suppuration of the frontal sinuses.—Dr. **LOGAN TURNER** showed—(1) A laryngeal reflector, adapted for class teaching; (2) anatomical preparation of the larynx, adapted for class teaching.—Mr. **ALEXIS THOMSON** showed a large carcinomatous kidney removed from a patient, æt. 30, by the retroperitoneal route.—Dr. **CHALMERS WATSON** showed—(1) A cast of enlarged gland from a case of exophthalmic goitre, to show enlargement of the middle lobe—the lower termination of the thyro-lingual duct; (2) photographs and microscopic specimens from a case of intestinal obstruction in a dog, showing a remarkable condition of localised hypertrophy of the muscular coat of the ileum.—The **PRESIDENT** read a paper on "The Inefficacy of Disodic-methyl-arsenate." This drug, otherwise known as arrhénal, has been recently introduced. As in the case of the cacodylates, it has been recommended as a remedy which should replace the older medicinal compound of arsenic. In a former paper the President had brought forward evidence which showed that cacodylates are relatively inefficacious as agents for producing the therapeutic effects of arsenic. He had subjected the drug now under discussion to similar clinical and chemical tests, and finds that, as in the case of the cacodylates, the arsenic in arrhénal is so firmly fixed that it cannot be set free. The drug is therefore practically of no value. In a case of chorea it was administered for many weeks without any improvement, but when liquor arsenicalis was used instead, improvement was at once observed, and the case rapidly got well.—Mr. **CAIRD** read a paper on "Excision of Carcinoma of the Rectum and the Treatment of Inoperable Carcinoma of the Sigmoid Flexure." Operative interference in these cases was at one time regarded as hopeless, but this is not so now. Too much stress should not be laid on the presence of enlarged glands, because of the septic ulcerating surface being quite sufficient of itself to account for their presence. A preliminary colotomy is not of any advantage, neither is a mesial exploratory incision required. The bowel should be washed out with boracic lotion or saline solution immediately before the operation. Two incisions, perineal and parasacral, are used. It is important to open the peritoneal cavity early, so as to get free access. The gut should be pulled down, clamped, and, the tumour being removed, end-to-end suturing should be attempted. The anterior part should, at least, be united if complete junction is not possible. Of ten cases operated on, all recovered—five with sacral anus and fair control, four complete cures. When the sphincter is affected, use the perineal route, removing the coccyx if necessary. In inoperable cases do an inguinal colostomy. The one-stage operations, done for urgent cases of obstruction, were all fatal. Of the twenty-two two-stage cases, done in quiet interval, all were successful. In the second stage, cut the bowel completely across instead of merely opening it. Paul's tubes are then inserted. Duration of life afterwards was from a few months to three years. Mr. Caird advocated the use of iodoform in these operations, but pointed out the risk of iodoform poisoning.—Dr. R. A. FLEMING read a paper on "Retinal Hæmorrhage as a Diagnostic Feature in Fractures of the Base of the Skull." These hæmorrhages may be caused by pressure in the intersheath space of the optic nerve, under certain conditions. He had noticed their occurrence in cases of subarachnoid hæmorrhages on the side of the effusion only. These hæmorrhages do not occur if the hæmorrhage into the subarachnoid space comes on slowly, but only if it occurs very rapidly.

EDINBURGH OBSTETRICAL SOCIETY.—*January* 14, 1903.—Dr. JAMES RITCHIE, President, in the chair.—Dr. MUNRO KERR (Glasgow) read a paper on "The Importance of Estimating the Relative Size of the Fœtal Head and the Maternal Pelvis in Medium Degrees of Pelvic Deformity." He first emphasised the truth of Barbour's aphorism, "The fœtal head is the best pelvimeter," and then described Müller's and Pinard's methods for testing the relative sizes of fœtal head and maternal pelvis. The defects of these methods were pointed out, and a new method, which was a modification of the others, was described. Müller relied upon abdominal examination, Pinard on vaginal, but Dr. Kerr found the bimanual method gave better indications of the relative size of fœtal head and pelvis. It was useful only in moderate degrees of pelvic deformity, not in the slight or the excessive varieties.—Dr. LINN read a paper on a "Case of Albuminuria in Pregnancy: the Influence of Thyroid Extract." He related the case, which was a typical one of albuminuria and eclampsia. Thyroid extract had been given freely, but it had no apparent effect on the excretion of albumin or of urea, and did not prevent the occurrence of eclamptic seizures.—Dr. OLIPHANT NICHOLSON read a paper on "The Treatment of the Auto-intoxications of Pregnancy by Thyroid Extract: the Anticipation of Impending Eclampsia." He first of all insisted that an active preparation of thyroid should be used, as he found many forms inert; and, secondly, the drug must be given in sufficiently large doses. He then gave details of two cases of auto-intoxication during pregnancy, in which he had used thyroid extract with benefit. The first case got well; but in the second, though there was no eclampsia at the time of labour, a fit occurred a week later, and ultimately the patient died of cardiac thrombosis.

GLASGOW MEDICO-CHIRURGICAL SOCIETY.—*January* 9, 1903.—Dr. W. F. **GIBB** showed—(*a*) A specimen from a case of intussusception of the jejunum. The patient, a male æt. 29, four days previous to admission to hospital, was seized with pain and vomiting. In the left iliac region there was an area of dulness. On the abdomen being opened, an irreducible intussusception was found three feet below the duodenum. Enterectomy with end-to-end suture was performed. Post-mortem, no tumour or probable cause of intussusception was found. (*b*) Cancer of small intestine removed by enterectomy. The patient, a female æt. 27, had complained, for three months before operation, of vomiting, emaciation and constipation. On opening the abdomen, a tumour was found a little distance from the cæcum. At this stage the bowel was drained. Two weeks later tumour was removed, and end-to-end suture performed. The patient, who was pregnant at the time of operation, was delivered three weeks ago of a living child. The tumour was a colloid cancer. (*c*) Ovarian tumour removed from an infant æt. 2½ years. The tumour was a myxo-chondro-sarcoma. No ovarian tissue was found in the tumour.—Dr. **ALEX. M'LENNAN** read a short paper on a case of congenital deformity of the nose, associated with a degree of median hare-lip.—Dr. **WALKER DOWNIE** gave a lantern demonstration, to illustrate results obtained from the use of paraffin in the treatment of deformities of the nose.

GLASGOW PATHOLOGICAL AND CLINICAL SOCIETY.—*Jan.* 12, 1903.—Mr. A. E. **MAYLARD**, President, in the chair.—Dr. **HENRY RUTHERFURD** showed—(1) A child operated on for intussusception at three months, (2) a child showing scars of intra-uterine smallpox, and deformities probably due to the same cause.—Dr. **JOHN H. TEACHER** gave a lantern and microscopical demonstration of chorion epithelioma (deciduoma malignum of authors), and of chorion epitheliomatous and hydatidiform-mole-like structures in teratomata of the testis. The latter part was from preparations the gift of Dr. Schlagenhaufer of Vienna, Dr. Schmorl of Dresden, and Prof. Marchand of Leipsic. Dr. Teacher also gave a short account of the opinions held as to these tumours.—Dr. J. **KERR LOVE** and Dr. J. W. **LEITCH** showed a specimen of aneurysm of the aorta in which death occurred from rupture of the heart, and read notes of the case.—Dr. J. K. **KELLY** read notes and showed a specimen and microscopic sections of sarcomatous disease of the uterus and right ovary, with adenocystoma of the left ovary, removed from a patient æt. 66.

The following exhibits were on view, during the meeting, by Dr. R. S. **THOMSON** and Dr **ROBERT FULLARTON** :—(1) Water-colour drawings illustrative of the prodromal rashes of variola, etc.; (2) photographs illustrating various phases of the variolar eruption.—By Dr. JOHN BROWNLEE—A microscopical demonstration illustrating certain features of the variolar eruption.—Dr. T. K. MONRO—A water-colour drawing by Dr. A. J. BALLANTYNE, representing severe scrofuloderma.

ANALYTICAL REPORTS.

FERROLEUM.

(Ferroleum Co., London, E.C.)

THIS preparation contains phosphate of iron, a small amount of pure phosphorus, cod-liver oil, and glycerin. As shown by the *Lancet's* analytical report, its composition is as under:—

Phosphate of iron, etc.	1·43 per cent.
Phosphorus	trace.
Cod-liver oil	40·00 per cent.
Glycerin	10·76 ,,
Moisture	47·81 ,,

Ferroleum is therefore a combination of iron phosphate with cod-liver oil, the latter present in the form of a fine emulsion, along with some phosphorus; it thus contains three powerful tonics and alteratives—iron, phosphorus, and oil. It is not unpleasant to take; the oil is finely divided in it, consequently quick of absorption; the iron appears to be as free from disturbing effects, and as easily made use of as the oil.

The home of ferroleum is Canada, where for eight years it has been on the market, and seems to have been highly appreciated. In prescription form it reads:—

℞ Olei morrhuæ (opt.)	7 oz.
Ferri phosphatis	2 drms.
Phosphori	1 gr.
Glycerini, aquæ, etc., q.s. ad	15 oz.

Sign.—A teaspoonful to a dessertspoonful thrice daily, according to age, after or before food; in adults, gradually increased to a tablespoonful.

The whole of the 1 gr. of phosphorus introduced into each 15 oz. (0·014 per cent.) would seem not to remain uncombined, as only a trace is discoverable on analysis, unless 0·014 per cent. is a trace; while three half-ounces in the day would represent $\frac{1}{10}$ gr. of phosphorus, not an absolutely safe amount for continued taking.

However, ferroleum, young to us, if middle-aged, as remedies go nowadays, to Canadians, promises well, and from its composition and characters should find as great a vogue here as oversea.

There is no doubt that there is great room for such a preparation with iron, cod-liver oil, and phosphorus present together. Iron is good, phosphates are good, oleum morrhuæ is good in many diseases and unhealthy conditions; in most of these, the three together, if given in such form as permits of their toleration, are more than good—are better. Such a means ferroleum affords. We shall watch with interest its future career in this country.

MONTHLY NOTES
ON METEOROLOGY AND VITAL STATISTICS.

By A. LOCKHART GILLESPIE, M.D., F.R.S.E., F.R.C.P.Ed.,
MEMBER SCOTTISH METEOROLOGICAL SOCIETY.

METEOROLOGICAL MEANS FOR THE EAST OF SCOTLAND DISTRICT, FOR THE FIVE WEEKS ENDING DECEMBER 27, 1902; AND FOR THE YEAR FROM JANUARY 1.

	TEMPERATURE.			RAINFALL IN INCHES.		SUNSHINE. HOURS.		Mean Daily Variability of Temperature.
	Mean.	Accumulated Day-Degrees.		Actual.	Accumulated from Jan. 1.	Actual.	Accumulated from Jan. 1.	
		Above 42°.	Below 42°.					
Mean .	38°·2	*[1] 52° [2]2384°	168° 908°	3·4	31·7	41	1298	3°·2
Observed	39°·6	[1] 64° [2]2066°	140° 931°	4·1	26·1	20	1125	4°·2
Difference	+1°·4	+12° −318°	−28° +23°	+0·7	−5·6	−21	−173	+1°·0

VITAL STATISTICS.

MORTALITY IN FOUR LARGE TOWNS IN THE EAST OF SCOTLAND (EDINBURGH, DUNDEE, ABERDEEN, AND LEITH), DURING DECEMBER AND SINCE JANUARY 1, 1902. Actual Numbers and Rate per 10,000 per annum.

	TOTAL.		CONSTITUTIONAL DISEASES.		CIRCULATORY SYSTEM.		RESPIRATORY SYSTEM.		NERVOUS SYSTEM.	
	No.	Rate.	No.	Rate.	No.	Rate.	No.	Rate.	No.	Rate.
Deaths expected and Mean Rate for 1891–1900	1319 14,204	219·6 196·9	228 2786	38·1 38·6	124 1337	20·6 18·5	318 2714	52·8 37·6	138 1597	22·9 22·1
Actual Deaths and Rate per 10,000	1210 12,836	201·3 178·0	217 2901	36·1 40·2	143 1434	23·8 19·8	272 2420	45·2 33·5	132 1400	21·9 19·4
Difference from Mean	−109 −1368	−18·3 −18·9	−11 +115	−2·0 +1·6	+19 +97	+3·2 +1·3	−46 −294	−7·6 −4·1	−6 −197	−1·0 −2·7

	DIGESTIVE SYSTEM.		URINARY SYSTEM.		PNEUMONIA.		PHTHISIS.		CANCER.	
	No.	Rate.	No.	Rate.	No.	Rate.	No.	Rate.	No.	Rate.
Deaths expected and Mean Rate for 1891–1900	82 980	13·6 13·6	30 367	5·0 5·2	117 1077	19·5 14·9	109 1359	18·2 18·8	55 648	9·1 9·0
Actual Deaths and Rate per 10,000	67 942	11·1 13·1	36 391	6·0 5·5	135 1213	22·4 16·8	94 1159	15·6 17·1	57 750	9·4 10·4
Difference from Mean	−15 −38	−2·5 −0·5	+6 +24	+1·0 +0·3	+18 +136	+2·9 +1·9	−15 −200	−2·6 −2·7	+2 +102	+0·3 +1·4

* NOTE.—The figure [1] denotes the data for December, [2] for year to date.

The five weeks ending 27th December 1902 were therefore characterised by greater warmth than usual, the last two weeks especially contributing to this result: during these two weeks there were 38 day degrees above 42° F. in excess, 53 day degrees below 42° F. deficit, or 95 day degrees of increased warmth in 14 days—equal to a rise of over 6° in mean temperature for each day. The rainfall was 20·5 above the average. The number of hours of bright sunshine was only 51 per cent. of the normal. Wind pressure was greater than usual.

The weather values for the whole year of 1902 show it to have been cold, more from lack of warmth than occurrence of any very marked cold weather, very sunless, and unusually dry. The actual deficit in day degrees of temperature, equal to 341° for the year, implies very nearly one degree below the mean for each day of 1902; the actual decrease in day degrees above 42° forming 13·3 per cent. of the average; the actual excess of those below 42°, 2·5 per cent. similarly. The year 1901, with a relative decrease in rainfall equal to 10·4 per cent. of the mean, afforded a 14·5 per cent. *increase* in the number of hours of bright sunshine; 1902, contrariwise, with a deficit of rain equal to 17·3 per cent., presents a 13·3 per cent. *decrease* below the yearly mean for sunshine.

And yet the mortality was very much lower. The deaths during December were less numerous than expected—only circulatory, urinary, pneumonic, and cancerous causes yielding increases. Influenza caused 32 deaths.

The values for the whole year 1902 have been, as formerly, cast into the form of a table, in which the variations from the normal figures are entered in terms per cent. above or below the mean; the values for 1899–1901 have been included for comparison:—

Causes of Death.	DIFFERENCES PER CENT. FROM MEAN.			
	1902.	1901.	1900.	1899.
Total Deaths	- 9·6	- 1·1	- 1·7	- 2·2
Cancer	+ 15·7	+ 13·5	+ 9·7	+ 19·8
Pneumonia	+ 12·6	+ 7·4	+ 13·2	+ 5·8
Circulatory diseases . . .	+ 7·2	+ 3·2	+ 6·5	± 0
Urinary ,, ...	+ 6·5	+ 18·0	+ 5·4	- 4·6
Constitutional ,, ...	+ 4·1	+ 1·7	+ 6·1	+ 6·9
Digestive ,, ...	- 3·7	+ 7·6	+ 3·8	+ 13·0
Nervous ,, ...	- 12·3	± 0	+ 1·94	+ 1·3
Respiratory ,, ...	- 14·5	- 9·9	- 7·7	- 14·9
Phthisis	- 14·7	- 10·1	+ 2·9	± 0
Pneumonia per cent. of total Respiratory . .	+ 10·5	+ 7·5	+ 8·6	+ 9·1

The remarkable fall in the number of deaths below that expected during 1902 is most striking—equal almost to 20 per cent. Of the divisional items discussed, cancerous causes, as in 1899, account for the greatest relative increase; in 1900 and 1901 they occupied the second position. Pneumonia comes next, rising from fourth (as also in 1899) to second (first in 1900). Nervous and respiratory causes disclose noteworthy decreases, while the relative deficit from phthisis is, as last year, greatest of all.

The proportion borne by the number of deaths from pneumonia to the total deaths from respiratory causes offers a greater increase per cent. above the mean than any of the last three years; while, on subtracting the pneumonic deaths from the respiratory total, the remaining causes present a 26·2 per cent. disease.

NOTE.

The ELEVENTH INTERNATIONAL CONGRESS of HYGIENE and DEMOGRAPHY will be held in Brussels from the 2nd to the 8th of September 1903, under the patronage of H.M. the King of the Belgians. The Secretary-General of the Congress is Professor Dr. F. Putzeys. All information and programmes can be obtained from Dr. Paul F. Moline, 42 Walton Street, Chelsea, London, S.W., the Hon. Secretary of the British Committee.

EDINBURGH MEDICAL JOURNAL.

EDITORIAL.

It is really a very ludicrous situation into which the physiological expert who represents the graduates of London University in the House of Commons has landed himself. Elected as a supporter of the present Unionist Government at a time when the South African War was proceeding, a war he approved of, he, now that peace has been established, has announced his intention of crossing the floor, and foregathering with the members of His Majesty's Opposition. The letters in which he has set forth his reasons for taking this step are scarcely what one might term scientific in character or substance. He opines, now the fighting is over, that the Liberal benches will offer him a more congenial environment than those to the right of the Chair, and be better suited to his temperament. Stating that in his opinion University members should have no political party fetters, but be free to vote simply as their deep erudition directs, or the welfare of their constituents demands, he rather illogically proceeds to intimate his resolve to change his party-coat, for if he, as a University representative, ought to wear no such covering, but should dwell in his shirt-sleeves in a little cave of learned members like to himself, why need he trouble about the cut? Can it be that the benches he wishes to sit upon are less crowded than those he desires to leave?

Still further, it seems that, after "ratting" corporeally, and finding mental enjoyment in the Liberal spiritual atmosphere, his volitional centres and motor impulses, upon a division, will remain functionally as before.

The scarcely dignified action of Sir Michael Foster cannot be regarded as anything less than a blow to the maintenance of University representation at Westminster. It also presents the public with a fresh illustration of how science may be out of its depth in the sea of politics. The scientific investigator and teacher has always to keep an open mind upon all subjects within his purview, to be ready to change or modify preconceived ideas on the discovery of fresh facts, or the promulgation of new theories. Science may be exploited successfully for a time by insincere men of biassed minds; she soon discounts the work of such as these. In politics, however, there is no such thing as exactitude, nor of concrete fact. Opinions differ in different men; if the political opinions of one individual are unstable, and change from time to time, even if the reasons be of a truly scientific nature, he loses the prestige of party and the power of influencing others.

There is no doubt that when a member says that he and the rest of his class should not be expected to swear fealty to any political party, and then proceeds to "wobble," he loses caste, and finds that his opinion has little weight in matters even on which he is an *ex parte* authority. A member of Parliament without a political creed is as poor a thing as a pigeon minus its cerebrum. He moves when stimulated only.

It is a grave mistake to imagine that general politics do not concern University members. Everything that affects the country, its trade and its prosperity, affects the Universities; every act of a University representative is liable to be regarded as testifying to what the professional classes think. Will the graduates of London University as a whole be pleased to find their member sitting with those who wish to abolish all such as he?

Bacteriology and Diagnosis.

WITHIN recent times we have seen the general adoption of bacteriological methods in medical and surgical diagnosis, and contemporaneous with this there have been great advances in bacteriology from the purely scientific point of view. Progress may be said to have been in two chief directions. In the first place, there has been a great widening of our knowledge regarding the various bacterial species, and especially of those related to the pathogenic bacteria; and, in the second place, a vast amount of work has been done on the properties of the blood serum in infections or in conditions of immunity artificially produced. The cardinal discoveries regarding the pathogenic actions of various bacteria and regarding immunity have not been shaken, but there is no doubt that we can now speak less definitely regarding "specific" characters and reactions than formerly. It may accordingly be not out of place to inquire in what way the practical utility of bacteriology as a means of diagnosis may have been modified by such work. For it cannot be denied that, on the one hand, bacteriologists have spoken in some cases with too great assurance regarding the infallibility of their methods; and, on the other hand, partly as a consequence, the clinician has been accustomed to expect from the bacteriologist a definite answer, "yes" or "no," in each particular case.

In the first place, we may speak regarding the recognition of particular bacteria, and consider some examples. Of each pathogenic organism when discovered there was supplied a description of the characters by means of which, it was believed, it could be recognised. Many of the criteria formerly considered sufficient have been found not to be so; and in fact it may be stated that in most cases an organism is a member of a group with closely similar characters. Some of the members of such a group may have different pathogenic properties, *e.g.*, the typhoid bacillus, Gaertner's bacillus, and Shiga's bacillus of dysentery, whilst others may be non-pathogenic. Up to quite recent times the peculiar staining reaction of the tubercle bacillus was believed to be peculiar to it and the leprosy bacillus, then the smegma bacillus was added to the number, and now a large number of bacilli have been cultivated and differentiated which stain in the same way. These "acid-fast" bacilli include the grass bacilli of Moeller, the butter bacilli of Petri and Rabinowitch, of Korn, and many others; even of the smegma bacillus there are several varieties. All these organisms form a group—the *myco-bacteria*—with allied characters as regards staining reaction, morphology, and, in some instances, appearances of cultures, and even pathogenicity. Of this group, wide-spread in nature, the tubercle bacillus has acquired pathogenic properties, and in different animals—fish, birds, and mammals—has become specialised in different ways. How do such facts affect the value of the microscopical diagnosis of the tubercle bacillus? Perhaps it is fortunate that the method has been put to the practical test thousands of times before we knew anything about the other acid-fast bacilli; it is unnecessary to say how it has stood the test. Absolute inerrancy cannot, however, be theoretically maintained; and it will no doubt soon be established under what conditions, if any, other acid-fast bacilli may be present in sputum, urine, etc. In the case of the examination of milk, butter, and various food-stuffs, on the other hand, the possibilities of error are manifestly great. The myco-bacteria are closely related to the streptothrix group, to which the actinomyces belongs, and some members of this group also are acid-fast. "Actinomycosis" has been usually diagnosed by the morphological characters of the parasite present, but it has been found that these characters may be presented by a number of distinct species of organisms; the term, therefore, does not strictly represent a single disease, but a group of diseases. At present, the diagnosis of "actinomycosis" may be considered sufficient for practical purposes, but it is quite likely that an extended knowledge of these streptothrices may supply facts useful in prognosis, and thus a recognition of the particular species will come to be of importance.

It is not sufficiently recognised that in certain cases the bacteriologist makes his diagnosis by induction, and that clinical facts, as well as his own observations, are necessary. No one questions the value of bacteriological diagnosis in gonorrhœa, but the microscopical characters and staining reactions of the gonococcus are not in themselves sufficient for its identification; along with these must be taken the fact that the organisms are in a discharge from the urethra or other common site of gonorrhœal discharge. That the typical picture indicates gonorrhœa is not a direct observation, but an induction from numerous observations. When we come to inflammations affecting serous and synovial membranes, the microscopic method alone is quite insufficient for the recognition of the gonococcus; cultures must be obtained, and their characters carefully studied. The bacteriologist may recognise the gonococcus in a discharge known to be urethral, and the *Diplococcus intracellularis meningitidis* in fluid known to have been taken from the spinal canal; but, in the absence of information as to the source of the material, he will be unable, without making cultures, to say which of the two organisms he is dealing with. Regarding the bacteriological diagnosis of diphtheria much has been written. To recognise the diphtheria bacillus with *absolute* certainty would require, in most cases, a small research, involving various animal experiments, yet, in the hands of an experienced observer, microscopical examination will yield practical certainty in a large percentage of cases, cultures in a still larger. In the case of a diphtheria-like bacillus obtained from some source other than the mouth or throat, the problem of identification may demand much more labour. Other diseases, such as influenza, plague, cholera, etc., might be considered from a similar standpoint. The diagnosis of members of the typhoid group involves the question of serum diagnosis, and this may be dealt with in another article. But enough has been said to establish the main thesis, that *specific* tests for the recognition of pathogenic bacteria are in most cases wanting; all the facts must be taken into consideration. And it need hardly be pointed out, that in drawing conclusions from these, experience, skill, and soundness of judgment are just as necessary as they are in ordinary clinical work. It is, no doubt, to be regretted that the bacteriologist may not always be able to give the clinician a definite statement, but this is determined by the nature of things, and the clinician has no more right to complain than the patient has when the clinician is in doubt. We have not thought it necessary to say anything regarding the utility of bacteriological diagnosis in general; this is, as a rule, now sufficiently recognised. Our wish is rather to induce bacteriologists not to hesitate to state the limitations of their methods; and clinicians to acquire, at least, that amount of theoretical knowledge which will enable them to appreciate the nature of bacteriological problems. Further advances may reveal additional difficulties, or may simplify methods, but in any case the facts must be faced as they emerge; scientific truth cannot be sacrificed to supposed practical utility.

The Chair of Anatomy.

THE appointment of a Professor of Anatomy in the University of Edinburgh is a matter of the highest importance for education. Great though the services of the younger handmaids of medical science undoubtedly are, the foundations of the healing art must, nevertheless, be laid upon accurate knowledge of human morphology. It therefore follows that the incumbent of the Chair of Anatomy in a school like that of Edinburgh, with its world-wide connections, must wield a powerful influence upon contemporary medicine. The chair of the Monros, of Goodsir, and of Turner has, during its two hundred years' existence, been surrounded by a halo of distinction, and to occupy it has indeed been as a crown of glory. Amongst the numerous sons of our Alma Mater engaged in anatomical teaching and research throughout the United Kingdom, there are several of exceptional ability in both directions; and it has long been clear that there could be no difficulty in finding, when the time arrived, a man in every way competent for the duties of the post. But when it became known that Sir William Turner would probably lay down the reins of office, which he had so long and so worthily held, in order to assume the higher duties of Principal of the University, the eyes of all turned with absolute unanimity to the sister University of Dublin. The only question ever heard was—"Will he come?" Professor Cunningham has for twenty years held a position in Ireland which is almost unique. As a teacher, an investigator, and an administrator, he has exercised unbounded influence for good over Irish education. He has sent out pupils fired by his own enthusiasm, to carry on the work in which he is a master; he has published researches remarkable alike for originality and lucidity; and he has been regarded by those within the portals of Trinity College, as well as without her walls, as one of the most far-seeing and influential men of affairs who have ever taken part in her counsels. But even these achievements, memorable though they are, form but a small part of his life-work. As Secretary of the Royal Zoological Society of Ireland, Vice-President of the Royal Dublin Society, Member of the Irish Fisheries Commission, and of the South African Hospitals Commission, he has shown an enthusiasm which has been infectious, and stimulating to all his fellow-workers. To secure the services of such a man for our own University might well be an object of anxiety to every loyal son. From every point of view it is fortunate that the Court of Curators should have invited Professor Cunningham to fill the Chair, and it is a matter of universal satisfaction that he has accepted their invitation. He has for two decades signally adorned the anatomical school of Dublin, and he may be confidently expected to throw additional lustre upon that of this city. When he returns to assume the duties of the Chair, he is certain of a welcome which will probably surpass any accorded in our generation to a new professor, and he may rest assured of loyal support in continuing and extending the work of the anatomical department of the University. It is recognised by all that the traditions of that department are in safe hands, and that it will, in the future as in the past, form the nursery of observation and research.

Max Schede.

WE regret to have to record the death of Max Schede, Professor of Surgery at the University of Bonn. He succumbed to an influenzal pneumonia, at the age of 59. Beginning his career as an assistant of the great Volkmann, his extraordinary industry and great ability gained for him, at a comparatively early age, first the surgical directory of the Friederichshain in Berlin, and soon after the chief surgeoncy of the new palatial Eppendorfer Hospital at Hamburg. Here he was afforded opportunities of clinical and operative work above anything attainable in this country, and scarcely to be equalled by those in any of the great teaching centres on the Continent. No one was better qualified than Schede for the Trojan task of controlling the entire surgical work of a hospital of 1600 beds.

Untrammelled by professorial duties, and supported by a staff of devoted assistants, Schede was able to record the results of his labours in a wealthy series of papers and addresses, which soon gained for him a world-wide reputation. He was perhaps best known in this country by the modification introduced by him in the operative treatment of chronic empyema, and by his observations on congenital dislocations of the hip; at the same time, it is scarcely possible to mention any department in the science and practice of surgery to the advancement of which he did not contribute. We have had the privilege of "assisting" at his operations, and were much impressed by his precision, dexterity, and thorough mastery of technique. His untimely death is a loss to surgery wherever it is taught or practised.

Lorenzism.

APART from our natural antipathy to the discussion in the lay press of technical details and therapeutic methods, we must confess that we have been unable to appreciate the recent boom in the so-called bloodless treatment of congenital dislocation at the hip.

The American newspapers catered handsomely for their readers by publishing skiagrams of the pelvis of a millionaire's daughter, and authoritative details of the Viennese surgeon's work and methods; while our own journals succeeded in conveying to the public in this country the impression that something new and unknown to the profession was being disseminated by their means. As a matter of fact the methods of Lorenz are as well known here as in the Austrian capital, and have been practised in our hospitals for several years back. It is well, however, to give credit where credit is due, and we do not detract in any sense from the great achievements of Lorenz, when we associate the development of the present bloodless method of reducing congenital hip dislocations not with his name alone, but also with those of Paci, Hoffa, Schede, and others.

The Crucifixion from its Medical Aspect, as described by an Alleged Onlooker.

In the *Gaz. méd. de Paris* (17th and 24th January 1903) there is a very full critical notice of a work by a M. W. Sand, entitled "La Vraie Mort de Jésus." This production is founded upon a letter, hitherto unpublished, alleged to have been written by one of the Essenes to another member of the sect only seven years after the death of Christ. The writer claimed to have been an eye-witness of the crucifixion. Sand discusses the significance of the fresh evidence afforded by this document, which he regards as genuine (or at least asserts that he believes it to be so), from the medical point of view. If, as M. Bandouin remarks in the *Gaz. méd. de Paris*, the document is authentic, it raises a question of the utmost interest; if apocryphal, it is still extremely curious.

The medical outcome of the discovery *après* Sand may be summed up in a few words. Christ did not die on the cross; before being pierced by the lance (only a superficial wound) a state of stupor supervened, caused by seven long hours of agony; after thirty hours, consciousness returned, etc., etc. Death occurred six months later from the after-effects, and burial on the border of the Dead Sea. M. Sand then indulges in various ingenious hypotheses, much more recondite than the tale told in the letter, and quite unnecessarily so.

An interesting point, from the psychical aspect, is presented by the references in the notice of the book to recent works by R. P. Dom Chamard on "The Shroud of Christ," and M. Vignon on "The Sacred Shroud of Turin," "the true and only one" according to many, and their ironical allusions to the same.

The treatment of the subject, indeed, is essentially "Latin"; science, religious credulity and incredulity, and imagination, "mixtie-maxtie." For instance, the question if a right-handed soldier would ever plunge his lance into the left side of his victim, as this wonderful letter reports, and as Vignon upholds theoretically (the Turin shroud presents signs which have been interpreted to show that the exact spot is on the left), is raised, as well as others, as to the extent of the wound caused by the lance, whether a penetrating wound, from an oblique or nearly horizontal thrust, or only a *piqûre.*

The French seem to relish this kind of functional folly. M. le Dr. Cabanes, last May, wrote about the same subject in *La Revue;* D. Ramée also, and Box (1901). In 1890, Clark, an American, wrote in support of the theory of Christ having survived the cross.

Cui bono? After twenty centuries, who can hope to get at the truth?

Puerperal Eclampsia.

THE Clinical Society of Manchester proposes to make a collective investigation as to the best means of treating puerperal eclampsia. A form of report has been drawn up, which will be sent to any practitioner who has a case of the condition under his care. All that is required is to send a postcard to Mr. Price Williams, Swinton, near Manchester, who will at once forward a form of report and an explanatory letter. We sincerely hope that the praiseworthy efforts of the Manchester Clinical Society will meet with the response which they deserve.

A Century of Sonnets.

THERE is much in environment, yet there may be no responsiveness even within the witchery of the most enchanting scenes. Where, however, this harmony coexists, one of the modes in which it expresses itself is in poetry. Place the minstrel in congenial circumstances, and he must needs sing. And where perhaps can the bard find such ample material for the exercise of his art than in the land hallowed by Scott. No wonder, then, that Dr. Gunn[1] has indited some exquisite sonnets, inspired in some measure by the romantic legends so plentiful throughout the district in which his practice lies. The premier place in this collection of lays is occupied by those prompted by professional instincts, and are based on many of the more familiar events in the life of a country doctor. Whether they deal with the intricate problems of vigour or dissolution, of anæsthesia, of serum therapeutics, or with some of the difficult and often puzzling questions propounded by anxious patients, and hard to reply to at once truthfully—yet in such a manner as to encourage hope and fan the waning flame of vitality—all will be found handled with that genuine delicacy of touch characteristic of the real poet, as well as of the accomplished physician and surgeon. They exhibit, indeed, observation and thoughtfulness of a ripe order.

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[1] "A Doctor's Thoughts," by Clement B. Gunn, M.D. Selkirk: James Lewis, 1902.

ORIGINAL COMMUNICATIONS.

ON THE TREATMENT OF UTERINE FIBROMYOMATA, WITH A RECORD OF TWENTY-EIGHT CONSECUTIVE SUCCESSFUL ABDOMINAL HYSTERECTOMIES BY THE SUPRAVAGINAL METHOD.[1]

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THERE is no subject in clinical gynæcology which, at the present time, lends itself more to discussion than the treatment of uterine fibroids. On the one extreme these growths are looked upon as being so trivial that they call for no treatment unless symptoms are very urgent, then palliative measures may be employed to tide the patient over the menopause, when the growth will cease from troubling. On the other, their presence is considered at all times to be a menace to life, and, when recognised, nothing short of their removal, and, if need be, of the uterus as well, is to be recommended. With such extreme opinions as these, held by eminent gynæcologists, the sufferer frequently is thrown on the horns of a dilemma, should she unfortunately have had sufficient interest in her condition to have acquired dual advice. From personal experience in the course of gynæcological practice, there is no condition upon which I am asked to give independent advice more frequently than this; and, further, there is certainly none upon which my opinion is more questioned and sought to be corroborated or otherwise.

That such divergence of views should exist, is to be explained, I believe, from two aspects—first, the extreme variability of the clinical course of these tumours; and, second, the rapid recent advances in gynæcological surgery.

As is well known, the clinical features of fibromyomata vary almost entirely with the original site and mode of growth in the uterine wall. The more they tend to grow towards the uterine cavity, the more evident and severe the symptoms become; thus, a submucous nodule the size of a walnut may imperil the life of a patient, or at least reduce her to a state of absolute invalidism, infinitely more than a subserous tumour the size of a football. Further, from alterations in their capsule, some tumours in any situation may at times cease to grow and become spontaneously inactive, while after the menopause the majority atrophy or become inert, although a small percentage take on increased activity of growth and malignant change.

With these differences in their clinical course, it is evident much latitude is given for the conservative physician to support his principles of hope, trust, and patience; while at the same time the more radical surgeon has a solid foundation for his policy of action.

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[1] Read before the Edinburgh Obstetrical Society.

What has led, however, to this great diversity of opinion more than anything else, has been the enormous advance in surgical methods and technique, which has robbed the radical treatment of these uterine growths of its terrors, and rendered possible, with ease and safety, what twenty years ago was considered, if successfully performed, an operation of almost miraculous character.

It would appear as if at present we were in the transition stage, where the older gynæcological physician has not advanced with the studies of gynæcological surgery, and views the treatment from the standpoint of his early practice and teaching; while on the other, as in all great advances, we have the opposite extreme of excessive zeal begotten of novelty. I have ventured, therefore, to bring this important subject before the Society in the humble form of my own experience, with the hope that a valuable expression of opinion may be given from among its members, so that some definite lines of guidance may be laid down which may be of benefit, not only to ourselves, but which may help to remove that variance of opinion which must breed in our patients discomfort, from want of confidence.

The treatment of uterine fibromyomata may be divided into symptomatic and radical.

The former embraces the exhibition of drugs, the employment of electricity, and the removal of the uterine appendage, and the latter the operations of myomectomy and hysterectomy.

SYMPTOMATIC TREATMENT: *Medicinal.*—This practically resolves itself into the exhibition of ergot, which, from its action in stimulating the contraction of unstriped muscle, is of special value in bleeding from the uterus, as it not only causes contraction of the vessels, but also of the uterus itself. By this means growths in its walls are firmly compressed and their nutrition impeded; while at the same time they are frequently extruded towards the uterine cavity, and expelled, or outwards beneath the peritoneum, when the symptoms of hæmorrhage are not so urgently manifest. Until comparatively recently, the treatment of uterine fibromyomata was almost entirely confined to the use of this drug. Now, however, this method has been almost entirely superseded by more efficient means, and should only be exercised where symptoms are of a trivial nature, as the prospects of cure are distinctly remote, and even then after a very prolonged period of irksome treatment. As I have already said, I intend mainly in this communication to give a résumé of personal experience. This, so far as ergot is concerned, is practically nil; thus I am incompetent to give an opinion of any weight, and shall pass to the next method, namely, *electricity.* I may say, however, I have met with many cases where a prolonged course of treatment by ergot had been tried before I saw the patient.

Electrical Treatment.—In a paper I read before this Society nine years ago, I gave an account of twenty-two cases treated by this method, and in a subsequent communication, in 1896, an account of three cases treated by electric-negative puncture. Since that time I have treated a large number on similar lines with very similar results. I have considered it, however, better to confine myself to the record of the early cases described, as sufficient time has elapsed to form an opinion of value as to the ultimate benefits derived from this form of treatment.

Of the twenty cases which I at these times stated to have had their morbid symptoms cured, I have been able to trace fifteen; nine have remained cured, and five of these have reached the climacteric; of the other six, two had return of bleeding, one of these expelled a large polypus, and has remained well since; in the other I performed oöphorectomy a year ago, having previously removed three years before three small polypi, which temporarily stopped the hæmorrhage. In two the tumour continued to grow to such a size that only hysterectomy could be recommended; in one this was acquiesced in and successfully performed; the other still refuses operative treatment. The remaining two cases showed evidence of active change in the growth. In one of these I removed the uterus by supravaginal hysterectomy five years ago, and she is now in absolute health, though the microscopic appearances of the tumour were undoubtedly myxosarcomatous, as I showed to the Society at the time. The other I saw for the first time again a few weeks ago, when she told me she had been absolutely well since the electricity was discontinued, until some months previous to her visit to me, when pressure symptoms had manifested themselves. On examination, I found the pelvis blocked by a large soft tumour, which I had little doubt was due to some malignant degenerative change in the pre-existing tumour. I offered to attempt its removal, but so far have been unable to prevail upon her to allow me to do so.

Shortly, then, the result of the electrical treatment on these fifteen cases may be summed up as follows:—Nine cured; two hæmorrhage recurred; two continued to grow; two underwent active degenerative change.

A result such as this must, I think, be considered most satisfactory, and fully corroborates what I at that time said of the great value of this form of treatment.

Removal of the appendages, as recommended by the late Lawson Tait, is undoubtedly of great service in the treatment of uterine hæmorrhage, by inducing a premature menopause; and in the treatment of fibromyomata it is of special value through this means, by promoting the atrophy of their growths which usually occurs after the climacteric.

It is limited, however, in its application by its impracticability in many instances, and also by the fact that in a percentage of cases it fails to produce the benefit desired. Failure to arrest bleeding has been stated by some operators of large experience to be met with in as large a proportion as 15 per cent. of cases. My personal experience in this operation is represented by nine cases; seven of these have been entirely satisfactory; in one the bleeding was stopped but the tumour continued to grow; while in another no benefit whatever occurred from the operation, either as regards hæmorrhage or growth, and hysterectomy had subsequently to be had recourse to.

In the soft œdematous type of fibroid, removal of the appendages seems to be absolutely valueless, and should never be attempted. Before myomectomy and hysterectomy were performed with such safety as they now are, this operation was frequently performed, and justifiably so; but the excellent results now obtained by the more radical operations have restricted its sphere of application, as the uncertainty of its beneficial effects in so large a proportion of cases hardly warrants one in exposing the patient to the risk of opening the abdomen, with only the probability of a cure and a 15 per cent. chance of failure.

Radical Treatment.—This is represented by the operations of myomectomy and hysterectomy, either of which may be undertaken by the vaginal or abdominal route.

Vaginal myomectomy naturally embraces the removal of stalked growths or submucous polypi, which, according to the position of the tumour, may be an operation of the utmost simplicity or of considerable difficulty. This depends greatly on whether the fibroid nodule is merely covered by a layer of mucous membrane which alone forms its attachment to the uterus, and which can be severed by simple torsion; or if, on the other hand, it is encapsuled by a thick layer of muscle derived from the uterine wall, in which case the growth can only be amputated by scissors or the écraseur. In these latter instances it is not infrequent for a certain amount of uterine inversion to be present, which demands great care in dividing the pedicle to prevent buttonholing the uterus. There is perhaps no more satisfactory operation in gynæcology than the removal of submucous polypi, their removal in a large percentage of cases being represented by a "simple turn of the wrist," by which means the patient is from that moment cured from bleeding and pain, which may have troubled her for years and reduced her to the most confirmed state of invalidism.

Myomectomy by the vaginal route, for sessile submucous tumours, was, before the period of antiseptics, most dangerous, and but rarely attempted. Now it may be undertaken with safety, and in suitable cases should be attempted without hesitation. For its efficient performance a widely dilated cervix is a *sine quâ non;* the operation is therefore chiefly applicable to those cases where the cervix has already been dilated by the downward growth of the tumour, or is markedly thinned by its pressure in the cervical canal. Cervical fibroids are also to be removed in this manner. The operation consists in free incision of the muscular capsule, with piecemeal enucleation of the growth and subsequent packing with sterilised gauze. Rigid antisepsis is of the utmost importance. I have on four occasions adopted this method of treatment for the removal of fibromyomata, ranging from the size of an orange to a cocoanut, with most gratifying results.

Abdominal myomectomy at one time was almost entirely confined to the removal of pedunculated subserous tumours, but now is largely employed for the removal of sessile, subserous, and interstitial tumours, and even submucous growths. It is indeed a debatable question how far conservatism in surgery warrants us in proceeding on these lines, but some operators have removed as many as fifteen nodules from the uterus in this way; the surface of the uterus being like a pattern in crewel work after the operation has been completed. If the uterus was indispensable to life or health, such a procedure might be justifiable, but the risks from such a lengthened manipulation and the question of the serviceability of the organ afterwards make one ponder whether it is not in the best interests of the patient to be rid of such a focus of neoplasms. Before performing myomectomy, one must in all cases be careful to ascertain that no other nodules exist in the uterine wall, else the real cause of the patient's symptoms may not be removed. I have on two occasions been tempted to simply remove a prominent tumour from the abdominal aspect, when on more careful examination of the uterus I have found other tumours, smaller in size, which probably accounted more particularly for the symptoms for which I was operating.

Hysterectomy, or removal of the uterus, is called for when the tumour or tumours give rise to urgent symptoms, and cannot be efficiently treated by the previous methods mentioned.

It may be undertaken either by the vaginal or abdominal route, according to the bent of the operator. A number of operators favour the vaginal operation for all tumours less than the size of a six months' pregnancy, and base their method of predilection on the low mortality, absence of shock, quicker convalescence, and the avoidance of an abdominal scar, with its accompanying tendency to weaken the abdominal wall. Others prefer the abdominal operation, as by this means they can see as well as feel what they are about, and can more readily manage complications which may arise. To me it appears more a matter of individual selection, and personally I have entirely confined myself to the latter. When the abdominal route is chosen, two methods may be employed—entire removal of the organ (pan-hysterectomy), or amputation through the cervix or lower uterine segment (supravaginal method).

The adoption of one or other of these methods is usually very much one of individual taste, the claims of both being freely supported by eminent operators of large experience. Those who favour the supravaginal method support its adoption mainly on the ground of greater rapidity, and the absence of weakening of the pelvic floor, by the preservation of the cervix with its vaginal attachments; while the disciples of pan-hysterectomy advance its superiority on the principles of peritoneal drainage and the impossibility of secondary cervical cancer.

After a small practical experience of both methods, I have confined myself entirely to the supravaginal method, if selection be possible. In this choice I am almost entirely guided by the saving of time in its performance, which, from my experience of abdominal operations, is one of great value.

Pan-hysterectomy averages fully twenty to thirty minutes longer in its execution than the supravaginal method, which itself takes from forty to sixty minutes in an uncomplicated case. Unless, therefore, there be some compensatory advantage in total removal, there seems no valid reason why it should be adopted. Drainage is in these cases of little or no advantage; personally, I have never used it, and should it be required it can be readily attained, while the chance of secondary malignant disease of the cervix is too remote to consider. Indeed, from statistics, the half-hour of extra time would in these grounds be better spent in removing the mammæ, which are more liable to malignant disease than the cervix.

My own experience in hysterectomy for fibromyomata only amounts to thirty-two cases, twenty-eight of which I have performed by the supravaginal and four by the total extirpation method. Two of the latter I did by selection, to gain an experience of the method; in the remaining two, I had to adopt the procedure, as the cervix was involved in the growth, which in one case was undergoing sarcomatous degeneration.

The operation was undertaken in the thirty-two cases mentioned—

For hæmorrhage, 20; pressure, 7; abdominal prominence, 3; pregnancy, 1; malignancy, 1.

Pathologically, they might be tabulated—

Multinodular, 20; calcareous, 1; œdematous, 7; cystic, 1; with carcinoma, 1; sarcomatous, 2.

The seven œdematous growths were in each case single and interstitial, and though enlarging the uterine cavity greatly in every instance, were only accompanied by hæmorrhage thrice. Hæmorrhage was the prominent symptom in the multinodular variety. Pressure symptoms were either due to the large size of the tumour or its impaction or growth in the true pelvis. A few of the cases are of special interest, and are worthy of a short description.

1. In this specimen I show, complicated by pregnancy at the fourth month, it will be noted that the placental site is placed over the seat of the tumour. This probably accounted for my inability to induce abortion which I previously attempted, through the contractions of the uterine wall on the placental site being prevented. The patient complained of severe pain and pressure symptoms.

2. The calcareous growth, which weighed 1½ lb., was removed from an elderly female æt. 69, on account of painful pressure symptoms; the uterus was so atrophied that it was with difficulty recognised, being about the thickness of a lead pencil. It was transfixed and divided in the same manner as an ovarian pedicle.

3. The sarcomatous tumour was removed from a patient æt. 59, who, before her climacteric (which occurred at 50 years of age) suffered from a large abdominal swelling. This decreased in size, and gave no trouble till about four weeks before I saw her, when she complained of severe intrapelvic pressure symptoms. The history of the case, and the diagnosis of a large soft uterine tumour projecting into and bulging the cervix, led me to believe some malignant change had taken place in a pre-existing fibromyoma; this was corroborated by microscopic examination, and pan-hysterectomy performed. The history, character of the tumour, and microscopic appearance, which shows large sarcomatous cells and fibro-muscular tissue, is of great interest, as it almost conclusively proves to my mind the much-debated question of the sarcomatous degeneration of fibromyomata. On four occasions I have removed, by hysterectomy, fibroids associated with other growths; in two, ovarian cysts; in one, a broad ligament cyst; and one with adeno-carcinoma of the fundus.

As regards operative procedure, I have to a great extent followed the method described by Kelly in supravaginal hysterectomy, although I frequently ligature both ovarian and uterine arteries before amputation of the uterus in simple cases where the latter vessels are easily accessible. As far as possible I attempt to ligature the uterine arteries at the point where they commence to ascend the side of the uterus, transfixing a small portion of uterine wall and thus embracing it in the ligature. By this means the chance of tying the ureter is minimised. Occasionally a small branch of the artery may have been given off from the main trunk below the point of ligation, and may occasion slight oozing from the stump; this, however, is easily controlled by the subsequent stitching of the pedicle by interrupted sutures, which I systematically employ. I never pay any special attention to disinfecting the cervical canal, and do not attempt to avoid passing the sutures through it, as recommended by some operators.

In the few cases I have done pan-hysterectomy I have always opened the anterior fornix first, and have found no special difficulty in subsequently opening the posterior, except in one case where the tumour was very large and lowly situated. In this instance I amputated the main bulk of the tumour, and removed the cervix subsequently.

The results of the thirty-two cases I have thus treated have, with one exception, been absolutely satisfactory. In this instance I performed the pan operation for a very large sloughing tumour, which was projecting through the widely dilated cervix. The patient died on the third day from septic poisoning, having probably been infected from the gangrenous fibroid. This is the only fatal result I have had in the operative treatment of fibroids by any method.

These might be tabulated as follows :—

Operation.	No.	Recovery.	Fatal.
Removal of appendages . . .	9	9	0
Myomectomy	10	10	0
Hysterectomy—			
(*a*) Pan-hysterectomy . . .	4	3	1
(*b*) Supravaginal	28	28	0
Total	51	50	1

The remaining thirty-one cases of hysterectomy all recovered without an untoward symptom. Indeed, it is to me a most surprising and at the same time gratifying coincidence,—the singular absence of shock or even discomfort after these operations, even in patients reduced to the extremes of bloodlessness. Their convalescence is much more rapid than even after a simple ovariotomy, the only discomfort complained of being that which is necessarily connected with the abdominal incision. In extremely anæmic cases I have almost, without exception, noted a swinging temperature, rising as high frequently as 102° F., unaccompanied, however, with any corresponding rise in the pulse rate. Should the ovaries appear healthy, I do not remove them, as by this means the harassing symptoms of an artificially induced menopause are avoided.

From what has been stated in the foregoing pages, it will be evident that the treatment of uterine fibroids offers considerable latitude for diverse opinions, but no support can be given to either of the extreme views held, as mentioned in the beginning of this article.

The presence of a fibroid of the uterus, even if it be of considerable size, should it give rise to no symptoms, is no indication for treatment of any kind being adopted. The possible chance of its becoming malignant is so remote, that its removal from that aspect is totally unworthy of the slightest consideration, and should it commence at any time to give rise to symptoms, treatment then can be adopted as required.

It may thus be broadly said that uterine fibromyomata which give rise to no symptoms or discomfort should be left alone, at least so far as surgical interference is concerned.

On the other hand, whenever marked symptoms appear, treatment is urgently demanded, as the general tendency is for these to continue and become aggravated unless the climacteric intervenes.

If treatment be thus necessary, one must naturally decide in what manner it is to be undertaken; and, from what has previously been stated, the selection of the most suitable and efficient method is by no means a sinecure, depending as it does on so many different conditions.

Thus in the typical case of a patient æt. 35, who is more or less invalided from menorrhagia, the result of an interstitial fibroid the size of an orange, it is extremely difficult to decide on the proper course to pursue. Being a free country, the patient herself may desire to continue in her crippled condition, as one must admit to her that the chances are distinctly against her bleeding to death. At the same time, tinkering treatment such as ergot, resting at the periods, hot douching, and even curetting, may be desired, by which means she manages to pass through years of an existence of semi-invalidism and comparative uselessness, till eventually either the delayed menopause may terminate her suffering after the best years of her life are past, or symptoms may become so urgent that more radical methods of treatment are demanded and undertaken in her weakened state. To sanction and aid such a career is, I consider, quite unworthy of our profession and curative methods ought in all such cases to be recommended; and it is now that the main difficulty arises, in proposing the most desirable means.

This practically resolves itself into either electrical treatment or abdominal section.

The former, I know, is almost universally scorned, but I very much question if legitimately so. From experience, as I have shown, it certainly deserves much greater deference than it has shown to it, and is certainly more worth trying than the "tinkering" methods so frequently adopted. Resulting, as it does, in a fair proportion of complete cures, it ought certainly to be advanced as an alternative to the more severe operative methods of treatment, in cases suitable for its adoption, and also where operation is absolutely repudiated by the patient. It seems to me that the main reason for its being almost generally decried is because of failures the result of its adoption in unsuitable cases, such as submucous tumours. Here it tends to aggravate hæmorrhage by stimulating uterine contractions, which thus drive the growth more into the uterine cavity in their attempt to expel it. When used for interstitial tumours of medium size, it seldom fails to prove beneficial, and for these its use should be mainly adopted. Further, should it fail in its action, no harm is done (as is so often stated), and subsequent operation is not in any way complicated, as I have proved from experience. I should like here to express the great importance of making an absolute diagnosis of the variety of tumour we have to treat in uterine hæmorrhage. This in many cases can only be acquired by thorough dilatation of the cervix and digital examination of the uterine cavity. By this means many a uterus may be saved by the recognition of a stalked growth which can easily be removed, and the patient saved from undergoing a more dangerous operation.

Should operative measures, however, be consented to, the alternative procedure of removal of the appendages or of the tumour by myomectomy or hysterectomy, have now to be discussed, the former with a possibility of a 15 per cent. failure and a minimum of risk, or the latter an absolute cure with a questionable 6 per cent. mortality? The decision must eventually rest with the patient; but personally I have no hesitation in advising the more radical method. In all cases the consent of the patient should be got to perform the major operation should the minor be attempted and found impracticable. There is, so far as I know, nothing in gynæcology to equal the satisfactory results obtained after the removal of fibromyomata. The patient is restored to absolute health after, in most cases, many years of inactivity and invalidism. In whatsoever manner it is done by competent hands, the risk is now so comparatively small that it seems well worth risking, as an absolute cure can be guaranteed in almost every instance.

In conclusion, I should like to say that, though I have brought this important subject forward mainly in the light of personal experience, and thereon have advanced my individual opinion, I have done so in the hope that an expression of opinion on this much debated and exceedingly important subject may be given by the Fellows of the Society, many of whom, from their large experience, are more competent to deal with it than I am.

SOME POINTS IN THE ETIOLOGY AND TREATMENT OF HYDROCELE OF THE TUNICA VAGINALIS.

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IT may be considered rather a reproach that, in spite of the extraordinary prevalence of hydrocele of the tunica vaginalis in Egypt and India, so little has been done to solve the vexed question of the etiology of this condition. So far as I am aware, except a "not proven" statement that hydrocele is always an accompaniment of filariasis, no convincing evidence in favour of any one causal condition has yet been adduced. It has been affirmed that "the lax and pendulous scrotum" common to the inhabitants of tropical countries predisposes to hydrocele; but that this is not *all* is, I think, proved by the fact that Europeans born in Egypt and living here all their life are not more prone to hydrocele than the inhabitants of colder climates, Scotland for example; whereas a very large proportion of the native Egyptians suffer from this disease. It must be remembered, however, that the trousers and closely-fitting drawers worn by Europeans in Egypt, as elsewhere, provide a constant support to the scrotum, a support that is entirely lacking in the case of the Egyptians—and of the "fellah" in particular—who are accustomed to wear nothing but a pair of very loose cotton drawers under their flowing "galabeah" or overall. I should be inclined, therefore, to consider the absence of support a more important factor in the etiology of hydrocele than the condition of the scrotum *per se*.

Another factor which I believe to be of far greater importance in this connection is the almost universal habit of sexual excess which exists among the native inhabitants of Egypt—particularly among the fellaheen, who are most liable to hydrocele—and of other Mohammedan countries generally.

It appears to me reasonable to infer that, as a result of the almost constant over-vascularity of the testis, and the contents of the scrotum generally, so induced, a considerable degree of chronic over-fulness of the vessels occurs, leading to an increased serous effusion from them. (A similar condition is seen frequently around chronic ulcers of the lower extremities.) If this condition is present in the serous lining of the tunica vaginalis, the effusion will collect in the ready-made cavity and will go on accumulating, as re-absorption is rendered difficult by the constant stream flowing *from* the blood vessels in the opposite direction. The tendency, therefore, will be towards increase in the amount of fluid effused.

One of the functions of the lining membrane of the tunica vaginalis is to provide sufficient serous fluid to allow of the smooth sliding of the visceral upon the parietal layer, and so permit the active movements of the testicle within the scrotum to take place without the least difficulty or friction ; but, owing to the increased vascularity of the serous lining by the frequent repetition of the sexual act, the supply of fluid is constantly in excess—in short, the lining membrane does more than Nature expects of it—and the accumulation of this fluid constitutes a hydrocele, which persists owing to the continued action of the exciting conditions and the difficulty of re-absorption as before mentioned.

Quite apart, however, from the results of sexual excess, the over-vascularity of the scrotal contents may be determined by the mere hanging of the scrotum without support, and also by the congested condition of the parts from the difficulty of venous return. The latter feature becomes even more evident when, as frequently happens, the hydrocele is complicated with varicocele, which tends to increase the size and weight of the scrotum still further, and thus to make it even more pendulous.

It is a noteworthy fact also, that in Egypt, horses, mules, and donkeys are frequently the subjects of hydrocele. This may be further evidence in favour of its formation from the want of support of a lax and pendulous scrotum, but it also introduces the question of the possibility of a common cause for men and animals —perhaps, for instance, a tainted water supply—which is too vast a subject to attempt to discuss here.

It would be interesting, however, to compare the frequency of hydrocele in animals in Egypt with European countries; but certainly in France, where, as in Egypt, the horses are rarely castrated in early life, I have not noticed any such obvious cases of hydrocele as in Cairo.

Though from an etiological standpoint hydroceles depending upon syphilis and other diseases of the testicle are in a separate class; as regards their treatment, I am of opinion that syphilitic hydroceles should be treated locally in exactly the same way as hydrocele from other causes.

On more than one occasion I have organised a search for *filaria* among the cases of hydrocele in my wards, the blood of the patients being examined sometimes at night and at other times during the day, but always without success. I have also had the hydrocele fluid examined, but no *filaria* were ever found, except in one obvious chylous hydrocele. One sometimes finds *filaria* in the blood of a patient who happens to be suffering from hydrocele; but Dr. Hayward, who was good enough to make these investigations, informs me that he has never been able to satisfy himself that *filaria* is a cause of simple hydrocele of the tunica vaginalis.

The collections of fluid in the tunica vaginalis in elephantiasis of the scrotum—which probably is originally due to *filaria*—

though at this stage no worms are to be found in the blood, are of a different nature to those of simple hydrocele, and are probably only an incident in the general series of changes known as elephantiasis, involving all the tissues, cutaneous as well as deep, entering into the formation of the scrotum and its contents. Occasionally, however, it must be noted that a *simple* hydrocele is found in such cases, but this had probably existed before the elephantiasis developed, and had thus always been entirely independent of it.

In infants and young children, simple aseptic tapping may be sufficient to effect a cure. In older children and in adults, the practice of tapping and subsequent injection of the tunica vaginalis with caustic fluids has been much extolled; but I cannot think that this method can be expected to be of any avail in the treatment of an average *Egyptian* hydrocele, not only on account of its size, but also because of the thick indurated leathery walls of the cavity. It is only when the case is seen quite early, in a young subject, that injection should even be considered as a possible means of treatment. The method of injection is as follows:—With all aseptic precautions the hydrocele is tapped, the fluid withdrawn through a large cannula—one cannot inject a hydrocele sac thoroughly through a tiny tube—and the tunica vaginalis injected with carbolic acid (1 in 5 in glycerin or in spirit, or even stronger). The scrotum is then gently squeezed and kneaded to allow the fluid to come into contact with all parts of the sac. The quantity injected varies with the size of the hydrocele, but, if possible, the whole of the lining membrane must be smeared—so to speak—with the fluid. The excess flows away from the puncture, which is then closed with a piece of sterilised wool or gauze and collodion. The scrotum is placed in a suspensory bandage, and rest enjoined for a few days. One of our difficulties in Egypt is to procure a suspensory bandage nearly large enough to carry an average hydrocele,—eloquent testimony to the unsatisfactory result likely to follow the use of injections. Usually a good deal of inflammation is set up; but this is far more often an orchitis or epididymitis, than an adhesive inflammation ending in the glueing together of the walls of the hydrocele sac.

In my experience, which, it is true, is small in this respect, the result is usually a severe inflammation of the testis or epididymis, or even of the connective tissues of the scrotum, which takes some time to subside, while the hydrocele gradually fills up again and is very soon larger than ever.

It will thus be evident that the method of injection has only been mentioned to condemn it, as far as Egypt is concerned, except in very early cases; or in patients in such a feeble state of health, who are suffering pain or distress from their hydrocele, but who cannot be submitted to the risks of an anæsthetic. Even in these latter cases, I should advise simple tapping, repeated as often as necessary, without any subsequent injection.

All cases of hydrocele should be treated by radical operation, and the operation I am in the habit of performing consists in making a free vertical incision, with all aseptic precautions, in the neck of the scrotum; the tumour having been pushed up nearly to the external ring by an assistant, who also keeps the skin of the scrotum tightly stretched. It has been advised to push the tumour up even higher, and to make the skin incision in the inguinal region; or to push it back towards the anus, and have the skin wound altogether in the perineum, with the idea, in both instances, that the wounds heal better; but I have never found any difficulty with the healing of scrotal wounds, provided the edges are brought into accurate apposition with sutures, and I think these far-away incisions only unnecessarily complicate the subsequent steps of the operation.

The skin incision is deepened in its whole length until the thick sac is exposed, and, after any bleeding points have been secured, a puncture is made with a scalpel and the fluid evacuated. The opening into the tunica is then enlarged with scissors, and the whole of the contents of the scrotum lifted out of the skin incision, after separating the thin layers of fascia with the fingers or the handle of the scalpel, a few touches of the knife being sometimes necessary to divide any thicker bands.

The whole of the tunica vaginalis, including often an elongated pouch running up almost as far as the external ring, is removed, with the exception of a flat plate behind covering the testis, the epididymis and the lower end of the spermatic cord. The thin fascia superficial to the tunica vaginalis must be saved, being separated off from the thick sac quite easily, to provide a soft connective-tissue protection for the testis in front, in place of the fluid pad to which it has become accustomed.

The tunica must not be cut too close to the testis or epididymis laterally, or troublesome oozing will occur from the cut edges. After ligaturing any bleeding points, and making quite certain that all oozing has ceased, the testicle is returned to the scrotum and placed well to the posterior aspect of the cavity, so as to allow the divided subcutaneous and dartos tissues to lie in front and provide some degree of protection from possible injury.

If oozing is troublesome, the whole cavity should be swabbed out with very hot sterilised water, which is a sure means of checking this form of hæmorrhage.

If the scrotum has been long distended, and the dartos tissue has become so greatly stretched as to have lost all its elasticity, a free counter-opening is made at the lowest point of the scrotum and a gauze drain inserted.

Should the hydrocele be excessively large, the greater portion of the lower half of the scrotum is completely removed by means of two incisions diverging from the original one, and meeting again behind at a point corresponding to its upper end. A new and smaller scrotum is then formed by bringing the cut edges together with a series of interrupted silkworm gut sutures, which include the whole thickness of the scrotal tissues, and a continuous silk suture to approximate the skin. A gauze drain may be placed in the lower end of the wound if necessary.

In many cases, with not too long a history, the dartos tissue still retains its elasticity and the formerly much-distended scrotum contracts down considerably as soon as the hydrocele has been removed, and eventually returns almost to its normal size. In these and in all other cases when it is not necessary to remove a piece of the scrotum, the incision is sutured with a continuous silk suture, which includes the whole thickness of the anterior scrotal wall, and then painted with Whitehead's varnish.

In cases of double hydrocele the scrotum is freely split along the median raphé by an incision in its lower part. On deepening this incision, the space between the two sacs is opened up. Each hydrocele is then pushed out of the wound in turn, and treated exactly as by an anterior incision. After the greater part of the two tunicæ has been thus removed, the testicles are returned and the incision closed with deep sutures, which include the whole thickness of the scrotum (and skin sutures also if necessary), and a gauze drain, which runs into the space between the two testicles, brought out of the posterior end of the incision. The wound is painted as in the other cases with varnish.

The ideal method of dressing the case after any of these operations, is to apply a thin layer of sterilised or antiseptic gauze round the whole scrotum, and then place it in a large suspensory bandage, by which it is held well up on to the abdomen. Generally, however, the suspensory bandages of the size required have to be specially made, and the more usual plan is to tie a piece of bandage round the waist, and then loop up the scrotum to it by turns of bandage until the whole scrotum is thoroughly well raised. The wound is dressed after forty-eight hours, and if there has not been much re-action the gauze drain is removed, the wound dressed if necessary, and the scrotum raised as before. In ten days' time the stitches may be removed, a suspensory or other bandage applied, and the patient allowed to walk a little and to gradually get about, but he must wear a support for several weeks to come.

If the oozing has not been entirely stopped before the wound is closed, there will almost certainly be a considerable passive hæmorrhage into the scrotum a few hours after the operation. In this event the wound must be re-opened and the bleeding points secured, if possible, or very hot water employed to check the oozing. This secondary bleeding very much increases the risk of subsequent orchitis and sepsis.

If orchitis occurs, and it must be admitted that there is a varying degree of inflammatory reaction of this nature in almost every case, the only treatment in severe cases is a tedious course of hot fomentations, belladonna being added to them if there is much pain, at the same time keeping the scrotum well suspended with a triangular bandage fixed to a waistband.

Rarely suppuration may occur, in which case the wound must be re-opened, washed out with perchloride and drained. I have never seen the testicle slough after the operation for hydrocele.

Many of the larger hydroceles are associated with varicocele and hernia, and the radical operations for all these conditions must be done at the original operation.

In certain cases, also, the testicles have become so compressed by the fluid, that their structure is absolutely crushed out of existence, so to speak, and they appear as slightly raised projections on the posterior wall of the tunica vaginalis. Such a testicle should be removed, the cord ligatured high up, and a large piece of the scrotum cut away.

Tertiary syphilitic hydroceles, if they do not soon react to constitutional treatment, must be treated in every way exactly like those of simple origin.

Another operation, sometimes known as the "Indian method," consists in splitting the tunica vaginalis anteriorly in its whole extent, and then turning the sac completely inside out, and, if necessary, fixing the cut edges posteriorly over the cord and epididymis with a few sutures. The tunica vaginalis thus certainly ceases to exist as a sac, but the testicle is pushed right to the front and lies immediately under the skin without any protection whatever. In the cases I have done by this method, severe orchitis has been the rule, and this must be very liable to occur subsequently as a result of the least injury to the scrotum or its contents.

I have never seen recurrence of hydrocele after the radical operation above described has been performed; indeed, it is difficult to see how this is possible, as no cavity is left in which fluid can accumulate.

This paper is purely a personal experience based upon rather an extensive series of cases, and I must assume all responsibility for the opinions herein expressed.

A CASE OF PURULENT PERICARDITIS COMPLICATED BY EMPYEMA: OPERATION AND RECOVERY.

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Cases of purulent pericarditis ending in recovery after operation are not very rare nowadays, but the following one has several points about it which seem to make it worthy of being placed on record:—

Case 1.—A. A., boy, æt. 7, was admitted to the Victoria Hospital for Sick Children, Toronto, on 26th October 1901, complaining of pain in the abdomen, cough, and great shortness of breath. Duration of illness was about one month. The somewhat meagre history obtainable on admission ran as follows:—Father, mother, three brothers, and two sisters all alive and well. The patient lived on a farm. Patient had measles and scarlet fever some years ago. About a month before admission to the hospital he came home from school one day feeling poorly. Three days later he complained of pain across the bowels, and two days later still suffered from intense abdominal pain centreing at the umbilicus, with marked general tenderness. He was very constipated, and had fever ranging from 100° to 102°; the pulse ran about 100, and the respiration was short, frequent, and of a grunting character. No physical signs were discovered by the medical attendant at that time. The fever persisted, and the abdomen gradually became prominent. Purgatives and enemata failed to act satisfactorily on the bowels. He complained about this time of sore throat, but nothing could be seen on examination of the fauces. In the second week of his illness, the tenderness became limited to the upper part of the abdomen, where it was very marked, and there was found to exist dulness all above the level of the umbilicus. Soon after this, dulness of the left side of the chest was noted, and the breath sounds became feeble here. The dyspnœa gradually increased, and was urgent when the patient was admitted to the hospital under Dr. Peters' care.

Condition on admission.—On admission the patient showed signs of great dyspnœa, and had to be propped up in bed. Cyanosis was very well marked, and his extremities were cold. Temperature 98°, pulse 100, and respiration 36. No œdema anywhere. The abdomen was prominent, especially in its upper portion, and here it was very tender. The umbilicus protruded, pointing to considerable increase in the intra-abdominal pressure.

Palpation revealed the lower border of the liver two fingers-breadth below the level of the umbilicus, and the tenderness mentioned was evidently located in this organ. The epigastric region was unduly prominent, and here fluctuation was easily obtained, and the fingers, on being suddenly depressed through the fluid, encountered the surface of the liver with distinct impact.

As regards the thorax, the respiration was almost entirely thoracic, and the muscles of extraordinary respiration were acting vigorously. There was some general fulness over the left side, especially in front. Vocal fremitus was found to be diminished all over the left chest. The cardiac impulse could not be detected at all. On percussion, dulness was detected on the left side extending up to the clavicle in front and to the spine of the scapula behind. This dulness also extended beyond the sternum to the right nipple, and below this merged into the liver dulness, thus giving a marked example of Rotch's sign of fluid in the pericardium. All over this extensive dull area there was considerable resistance to the percussing finger.

It was noted that when the patient lay for some time on his right side (or rather when he leaned over to the right, for he could not lie down), the dulness over the lateral portion of the left chest partially cleared up. On auscultation, the heart sounds could be fairly well made out about the left nipple, and a slight systolic murmur was audible here. Over the left chest the breathing was distantly tubular and quite clearly audible. At a point just below the angle of the scapula the breathing was loud and tubular, and here the vocal resonance was well marked, although elsewhere diminished. The diagnosis at this stage being by no means clear, a hypodermic needle was introduced (1) into the fluctuating swelling, 1 in. below the tip of the ensiform cartilage, and brought away a somewhat opaque fluid which proved to be rich in cell elements. Fluid of exactly the same character was obtained (2) in the left mid-axillary line, and (3) in the right fifth intercostal space 1 in. from the sternum.

It then became certain that we had to deal with an enormous collection of fluid in the pericardium, which was dangerously interfering with the heart's action and with respiration, and which had depressed the diaphragm in the median line to a point more than 1 in. below the tip of the ensiform cartilage. The liver was of course correspondingly depressed, but the fact that it reached two fingers-breadth below the umbilicus was due not entirely to simple depression, but partially also to enlargement due to venous congestion.

October 29.—At this time an attempt was made to evacuate the fluid through the fourth intercostal space on the left side, about ¾ in. from the margin of the sternum. The result was not very satisfactory, since, though some 10 oz. of fluid were withdrawn, the small drainage tube which was inserted became blocked by flakes of lymph and soon ceased to be effective. The urgency of the symptoms was, however, much relieved by this incomplete operation.

Before any more fluid was removed, an X-ray photograph was obtained of the condition, and it showed well the extent of the effusion; also that the heart was displaced over to the left, and that the liver was large and displaced downwards. It showed that the pericardial sac encroached upon the left half of the chest, and yet a margin of transparent lung was visible. As already mentioned, when the patient leaned towards the right for some time, the dulness partially cleared up here; evidently gravity then drew the fluid away from the left chest, and resonant lung at once took its place.

During the next two days the patient's condition became steadily worse; the cyanosis increased, and the temperature became subnormal to a marked degree.

November 1.—The patient was removed to the operating theatre, and an endeavour was made under local anæsthesia to aspirate the pericardium. The effort was not very successful; so, without further loss of time, it was decided to make a free incision into the pericardium, and thus secure thorough drainage. Local anæsthesia was still used, as the extremely low—almost pulseless—condition of the patient did not permit of a general anæsthetic being given.

As the original attempt to drain through the fourth intercostal space had not been satisfactory, the route recommended by Rotch, namely, the fifth intercostal space on the right side, about ½ in. from the sternum, was selected. This was not successful, as the right pleura was encountered *en route*, but was not damaged. The little incision was stitched up, and subsequently healed by first intention. Paget's suggestion was now followed, namely, to open in the fifth interspace on the left side. Here also the left pleura was opened, and a small amount of air was aspirated into the thorax. The wound was packed with iodoform gauze, and healed kindly. When this wound was inadvertently produced, we were struck with the fact that there seemed to be but little suction power in the pleura. Probably the presence of the huge pericardial sac in the left chest had already produced such collapse of the lung here that but little more negative pressure existed.

Having failed to reach the pericardium safely through either of these incisions, we were forced back to our original point of selection, namely, the left fourth interspace, ¾ in. from the sternum. Here we were quite successful. As soon as the pericardium was opened, a considerable quantity of sero-purulent fluid gushed out, but after a few moments the fluid escaped only during expiration. A drainage tube was placed in the opening. The escape of fluid was very slow, but was greatly facilitated by leaning the patient forward. After 17 oz. of fluid had been evacuated, the lower border of the liver was found to have moved up two fingers-breadth: when 29 oz. had come away, this organ had almost regained its normal size and position, and examination showed that nearly the whole of the left chest had become resonant. The rapidity with which the signs of urgent dyspnœa and cyanosis vanished as the fluid came away was very striking.

When the operation was undertaken the child was practically moribund. The pulse was scarcely perceptible at the wrist, there was deep cyanosis, and mental torpor was marked. When the fluid began to flow, the improvement in the pulse was almost instantaneous, and the cyanosis rapidly disappeared.

The patient slept well that night, and was able to assume almost a horizontal posture. The temperature rose as the cyanosis was relieved, and became febrile. The pulse rose with the fever more than did the respiration, and the average pulse and respiration for the week after the operation was as follows,—pulse 127, respiration 35. The average for the four days before the operation had been, pulse 99, respiration 32. The fluid removed was highly albuminous and coagulable, and was found to contain the *Staphylococcus pyogenes aureus.*

During the following day some 10 oz. of pus came away through a long tube conducted to a vessel beneath the cot. After that an absorbent dressing was put on, and this had to be frequently changed, as it soon became soaked. Thus, 39 oz. actually were measured as coming away during the operation and the twenty-four hours succeeding, and a considerable quantity was lost in the dressings.

After this the temperature continued to fluctuate; dyspnœa gradually set in again, and the patient became very weak. On the 15th November, just two weeks after the operation, a careful examination revealed the following physical conditions:—

The wound in the pericardium was still discharging slightly, but the tube had been removed. The left chest was almost immobile. Dulness with increased sense of resistance existed all over this side, but did not now extend at all to the right of the sternum. All over the affected side the breathing was tubular and fairly loud, and there were many medium crepitations. The vocal resonance was rather increased. Such conditions in an adult might have suggested strongly the existence of consolidation of the left lung, but in a child was quite compatible with the presence of fluid. The liver could be felt almost down to the level of the umbilicus, but was soft and scarcely at all tender.

An exploratory puncture at the angle of the left scapula showed clear serum, and aspiration here brought away 24 oz. of fluid, which was found to be highly albuminous and to contain the *Staphylococcus pyogenes aureus*. The dulness immediately cleared up, and the breathing became vesicular. The temperature continued to fluctuate, and on the 21st November reached 104°, but after that gradually fell. On 3rd December, the left side being now quite dull again, a free opening into the pleura through the seventh intercostal space in the mid-axillary line was made, and 30 oz. of pus were evacuated. The patient took ether well.

From that time on he did well; the temperature became normal, and he put on weight very rapidly. The pleural wound continued to discharge for several weeks, but healed before he left the hospital on 16th January 1902.

A few days before his dismissal the following notes were made of his condition:—

All wounds healed; no cough or fever; pulse 92, respiration 24. The left side scarcely moves at all.

Measurements at level of nipple:—Right chest, 12 in.; on full inspiration, 12½ in. Left chest, 11½ in.; on full inspiration, 11⅝ in. Vocal fremitus is diminished all over left side, and quite absent below the nipple level.

Cardiac apex beat is rather diffuse and indefinite, but some pulsation is seen in the second intercostal space near the sternum. On percussion the right chest is found to be normal. The liver dulness is also normal. Note on the left side is high pitched and tympanitic, and yet shallow in quality, and there is increased resistance. There is a dull note at the left base, and this round the side merges into the stomach tympany. The note is most resonant at the apex, and this resonance decreases downwards, and is least marked round the scar of the wound in the seventh intercostal space.

The superficial cardiac dulness is rather extensive, and reaches upwards to the third costal cartilage. It does not extend to the right beyond the sternum.

On auscultation, the right chest is normal. Over the left side the breathing is feeble, especially at the base. It is vesicular in type, except about the scar of the wound, where it becomes broncho-vesicular. The vocal resonance is diminished, especially at the base. There are no accompaniments. The second sound of the heart is reduplicated, otherwise the sounds are normal. In a skiagraph taken at this period, the heart is seen now to be in its normal position. There is still considerable shadow to the left, which is probably due to a much-thickened pleuro-pericardium.

September 11, 1902.—The mother of the patient reports to-day (eleven months after the operation) that the lad is in perfect health. He can run and play as well as other boys, and shows no evidence of embarrassment either of circulation or respiration.

REMARKS BY DR. RUDOLF.—Dr. F. E. Batten[1] remarks that pericarditis is much commoner than is usually supposed, it being present in some 3 per cent. of deaths at the Great Ormond Street Hospital; but that the diagnosis is usually missed on account of the small amount of fluid present. In our case it was the extent of the effusion which caused the difficulty. Particularly, the amount of fluctuation in the epigastric region caused a suspicion of subphrenic abscess.

Dr. Batten thinks that the rapidity of the pulse, out of proportion to the amount of distress, is characteristic, but that the pulse-respiration ratio remains normal. In the present case the average of the pulse, taken frequently during the four days preceding the withdrawal of the effusion, was 99, while that of the respiration was 32, and thus the ratio was altered and the pulse was not fast considering the amount of distress present.

The pain from which the patient suffered so much was confined to the abdomen, and the swelling and tenderness were suggestive to the medical attendant rather of abdominal than of thoracic trouble. This is not an uncommon feature in acute disease of the pleura or pericardium—the pain being referred to the terminations of the intercostal nerves. But in this case the liver, which was greatly engorged, was also excessively tender and painful, and thus contributed to the abdominal pain in the later stages of the case.

In spite of the great amount of backward pressure in the veins, as evidenced by the marked cyanosis, no dropsy was present at any time, and this, we think, is the rule when the increase in venous pressure has been *quickly* produced. This fact is evidence in favour of the view that the dropsy of ordinary heart cases, with breaking down of compensation, is due to something more than mere increase in venous pressure.

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[1] *Brit. Med. Journ.*, London, 1901, vol. ii. p. 605.

During the first operation the left pleura was entered, and yet no pneumothorax occurred. As already suggested, probably the reason for this was that the left lung was already almost completely collapsed owing to the encroachment of the distended pericardium. But a puncture of a normal pleura will not necessarily produce pneumothorax, for, as we showed by experiments on animals some years ago, the cohesion between the layers of the pleura may be sufficient to prevent this, and it is only when the layers are separated for some little distance that the air rushes in and a pneumothorax is produced by collapse of the lung.

When the pericardium was opened, a considerable quantity of fluid gushed out, but after that it only came away during expiration, and air was sucked in during inspiration. Thus, at first, the pressure in the sac was actually positive even during full inspiration, and this would produce great interference with the heart's action. The heart rapidly succeeded in compassing its work as soon as the gush of fluid occurred. Hence it is fair to conclude that it is only when actual positive pressure exists in the pericardium that any considerable amount of interference with the heart's action is produced.

The position which the heart takes up when a pericardial effusion occurs, has been the subject of much discussion, some writers stating that the apex rises, while others again maintain that it merely moves backwards, and that the impulse, which occurs at a higher point than the normal apex beat, is not the apex at all, but a higher part of the heart. According to the skiagraph taken before the fluid was removed, the upper border of the heart is higher than normal, reaching as it does to the disc between the third and fourth dorsal vertabræ, instead of only that between the fourth and fifth. It also appears to be shifted considerably to the left.

The occurrence of left pleurisy may possibly have been due to the accidental opening of that cavity, and Brentano[1] states that it is always due to such a cause; but G. F. Still[2] noted that in twenty-eight cases of purulent pericarditis, occurring at the Great Ormond Street Hospital for children, empyema existed in twenty-one, and hence the occurrence in our case may have been as in these, by direct extension. The usual sequence is empyema and then pericarditis, but here it was the other way about. The germ found in the pericardial fluid was the *Staphylococcus pyogenes aureus*, whereas the pneumococcus is the most common micro-organism found. Haushalter and Etienne[3] found it in nine out of seventeen cases, and G. F. Still,[4] eleven times out of thirteen cases, and all writers state that the staphylococcic form is rare. Our case was probably rheumatic, with a secondary infection, as usually occurs in rheumatic endocarditis.

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[1] *Deutsche med. Wchnschr.*, Leipzig, August 11, 1898.
[2] *Brit. Med. Journ.*, London, 1901, vol. ii. p. 606.
[3] *Rev. mens. d. mal. de l'enf.*, Paris, August, 1894.
[4] *Brit. Med. Journ.*, London, 1901, vol. ii. p. 608.

The free opening of the pericardium seems to be the proper treatment. The results of operation, however, have not so far been as encouraging as could be wished for. Roberts[1] collected thirty-one cases operated upon with sixteen recoveries, and Shattuck and Porter[2] mention twenty-four cases with eight recoveries. Aspiration is not recommended by many, if any, recent writers, they condemning it, chiefly, it appears, on theoretical grounds, and free incision and drainage is the operation generally recommended. It is scarcely necessary to add that all cases of pericarditis with effusion do not call for operation. Most effusions following rheumatic fever will become absorbed, this process being greatly hastened by the application of blisters. But in all cases where urgent signs of interference with the heart's action exist, then the fluid should be removed. Further, all cases that have become purulent (as shown by exploratory puncture) have gone beyond medical aid, and surgery alone can save them, and that only in some forty-five per cent. of cases.

REMARKS BY DR. PETERS.—1. My experience in attempting to open the pericardium does not quite agree with that of other operators. The first opening was made in the fourth interspace about ¾ in. from the sternum. This afforded a safe passage to the pericardium without involving the pleura, but drainage was not very satisfactory. I attributed this at first to the fact that the opening was upon what was practically the highest part of the chest with the patient in the recumbent position. Subsequently I found that the deficient drainage was largely accounted for by the flocculent character of the fluid in the pericardium. I made further attempts then to find a point at which drainage might be placed in a somewhat more dependent position. Following Rotch's advice, I endeavoured to reach the pericardium through an incision in the fifth interspace on the right side, about ½ in. from the sternum. This was not successful, as I found that I came down upon the right pleura, so I hastily closed this incision without any untoward effect. Next I tried the fifth interspace on the left side, as Paget recommends, and was equally unfortunate here; in fact, I inadvertently made a considerable opening in the pleura at this point, through which air was aspirated. Accordingly I plugged this wound with iodoform gauze, stitched up the skin over it, left it for three days, when the gauze was removed, and no further trouble took place. I was hence driven back to my old incision, namely, in the fourth interspace about ¾ in. from the left margin of the sternum. I incised here pretty freely, and dissected carefully down to the pericardium. I found this membrane to be very greatly thickened, and to be covered with a fibrinous layer on its inner aspect. However, I was able to make a free opening here without interfering with the pleura, and to insert the finger. I now placed a good-sized drainage tube in this position, and further difficulty in regard to drainage did not occur.

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[1] Howard Lilienthal, *Journ. Am. Med. Assoc.*, August 12, 1899.

[2] ~~*Journ. Am. Med. Assoc.*~~, May 6, 1897.
Boston M. & S. J.

2. From the point of view of approach by the surgeon, the pericardium differs in its behaviour from other organs with which one might institute a comparison. For example, distention of the bladder or pelvis of the kidney markedly increases the area through which these organs may be approached without danger to the peritoneum. But distension of the pericardium does not seem in the slightest degree to increase the width of the anterior mediastinum, by forcing apart the overlapping pleuræ on either the right or the left side. Doubtless this is due to the fact that the pleuræ are very firmly attached to the internal surfaces of the ribs and intercostal muscles. The consequence is that it is just as easy to dissect down upon a normal pericardium extrapleurally, as upon a distended one.

3. A distended pericardium collapses and returns to its normal size with peculiar difficulty. We can easily understand how the lung expands to fill a previously distended pleural cavity when evacuation is accomplished, but no such mechanism can occur in the case of the pericardium, and drainage is thus greatly interfered with, the tendency being rather to suck the air in than to force the fluid out. Of how healing finally does occur I have no clear conception. Evidently the negative intrathoracic pressure appears to become satisfied by lung expansion, and allows the pericardium to fall back upon the heart. The tonic tension of the abdominal muscles no doubt also aids by forcing up the diaphragm. Doubtless adhesions ultimately occur between the heart and the pericardium, and this space is, for the time at least, almost entirely obliterated.

At all events, in this case the cavity of the pericardium gradually became smaller and smaller, the fluid becoming less and less purulent, and the final healing seeming to occur by a plastic exudate, some of which was forced out of the wound. It would look, in this case at least, as if the colonies of bacteria had died out, although they manifested their activity in the adjacent pleura of the left side, as described elsewhere in the history.

ON HEAT STROKE.

By ANDREW DUNCAN, M.D., B.S. (Lond.), F.R.C.S., M.R.C.P.,
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To those who have chosen a career in the service of the Crown in the tropics, the subject of heat stroke is one of importance second to none. If an officer of our public services suffers from heat stroke at the outset of his career, he may either be compelled thus early to give up his chosen path in life, or, if he recover sufficiently to return to duty, he will always be subsequently liable to second attacks, and thus be debarred from participating in valuable appointments involving service in the hot plains. The especial object of this paper is to indicate a means of prophylaxis, which, in my own case, I have found exceedingly efficient. As I had, previously to the method to be later on described, suffered on four different occasions from the effects of the sun, it would seem that there is some value in it.

Clinical Varieties of Heat Stroke.—The sun's rays may affect an individual in various ways. The subject will, I think, be best considered under the headings of:—*A*. HEAT COLLAPSE; *B*. HEAT STROKE—(*a*) *Direct heat stroke, or sunstroke proper;* (*b*) *indirect heat stroke.*

A. HEAT COLLAPSE.—Here the patient suddenly turns giddy and falls. The skin is moist and cool, the breathing hurried but never stertorous, the pulse small and soft, the pupils dilated, and the temperature at or below the normal: there is no complete loss of consciousness, as a rule, and recovery generally occurs.

B. HEAT STROKE.—(*a*) *Direct heat stroke or sunstroke.*—There are several forms of this variety. *In one*, the victims are mostly unaccustomed to the fatigues of marching, and it is especially liable to affect them when the air is moist, so that the skin action becomes diminished. Violent headache is first complained of, and oppression: the march is nevertheless continued, and the patient next falls in convulsions. The teeth are firmly closed, insensibility is absolute, respiration difficult, pulse small and irregular, and often incontinence of urine occurs. *In another*, the subject streams with sweat, becomes progressively paler, the lips are cyanosed, the veins swollen, the eyes injected, and the respiration shallow and quick, until he falls to the ground. Consciousness is not, generally, entirely lost, and revival occurs if the patient be laid down and relieved of all impediment to free respiration. *In a third case*, no fatigue is complained of, but the patient is thirsty, and suddenly falls forward comatose. The state of coma may last twenty-four to thirty-six hours, and may end in death without recovery of consciousness. *In a fourth variety*, after a hot and wearying march in the sun, the subject is seized with a raking headache. This hourly becomes more and more intense, so that within twenty-four hours he may be rolling about in agony from the terrific pain in the head. Soon great intolerance of light occurs, and, after perhaps forty-eight hours, unconsciousness sets in. Should the patient not die, the intense pain in the head may last for six to eight weeks, unrelieved by any drug, with the exception of slight evening remissions. It then gradually abates.

(*b*) *Indirect heat stroke.*—Here the patient is not attacked whilst in the open, but after retiring to his hot bungalow. It is the most frequent form, in my experience. In this case, at the onset the skin becomes pale: there is nausea, colic, and incontinence of urine. Convulsions now follow, to be succeeded by cyanosis, dyspnœa, and insensibility. The breathing is stertorous, the pupils contracted, and the temperature of the body may reach 108° F. to 110° F., remaining high for some time after death.

Such are, briefly, the various ways in which an individual may be attacked by the sun. The indirect form is the most frequent, according to all experience. To take one instance. In the China War of 1860, sunstroke occurred amongst men who had not been exposed to the sun for several hours previous to the attack. Direct insolation occurs far more readily where the atmosphere is humid; for here the natural protection afforded by the body evaporation ceases, and so there is retention of heat within the body. Let us now inquire more fully into the *etiology*.

Marching during the hot weather is responsible, as one would naturally expect, for attacks. Thus in Madagascar, in 1895, the 14th French Battalion suffered greatly, due to a "murderous" march in the sun: 40 per cent. of the affected were lost. The 200th Regiment also lost 40 per cent. from the same cause. In the Khartoum Expedition, during the advance of Macdonald's Brigade from Suarda to Absarat, the days were extremely hot. The only water obtainable was that carried in the men's bottles. Although the men were Soudanese, twenty-nine cases of heat apoplexy occurred. During the last North-Western Frontier campaign the 35th Sikhs marched to Malakand on 30th July: eighteen men fell dead from sunstroke on one march from Jalala to Dargai.

As regards *the meteorological condition*, Roth and Lex state that, in their experience, warm days in the cool season of the year are especially dangerous. Moist air, absence of wind, and hot winds, all favour the onset of attacks. As regards *individuality*, new arrivals in a hot climate suffer more than old residents. Bryden, in his "Vital Statistics," showed the liability of newly arrived troops in India to be quadrupled. The admission rate for the ten years 1860–69 for heat apoplexy was 4·3 per 1000; that of the newly arrived regiments for 1864–69 was 16·8 per 1000. This rate of newly arrived soldiers rises still more if they be sent on service at once. Thus the ratio for the new army in India in

1858 was 55·8 per 1000! To show the effect of seasoning, an instance, mentioned by Sir Ranald Martin, may be narrated. During a march in May of forty miles under a powerful sun, the heat was nearly beyond endurance; yet not one European officer, commissioned or non-commissioned, was affected. All were well seasoned to the climate.

The *plethoric* and *intemperate*, those suffering from *fatty heart* or who have had *syphilis*, are found to be especially predisposed.

In hot countries, it is needless to state that, where possible, the work of the day should never be done in the middle of the day. In the passage of the sun's rays through the atmosphere, the loss by absorption of heat which they contain is more than 20 per cent. on a vertical, and almost all on a horizontal, beam. The preventive precautions to be taken on the line of march will be narrated further on.

Influence of alcohol.—Sir Charles Napier, in Scinde, at the outset declared that the sun should have in his case no ally in drink. Alcohol can destroy the comparative immunity possessed by coloured races; for Dr. Yandell has shown how the negro, when he removes to the cities and drinks to excess, becomes as liable as the white race in America. In Egypt in 1882, the 72nd Highlanders arrived at Suez from India on 8th August. Before leaving the docks the men obtained some brandy. A powerful sun was burning in the sky. During the short march of ten miles from the docks to the Victoria Hospital, ten men were knocked over by the sun, of whom one died on the way, and two within two days. In those expeditions where stringent orders regarding alcohol have been used, sunstroke has been very rare. Thus in Bechuanaland, with a temperature of 110° in double-fly tents, and with arduous duties, sunstroke was unknown.

Overcrowding.—This is a dangerous factor, both in the open and under cover. Marching in close order is to be avoided in a tropical country. During a certain march in India, Dr. Taylor, the medical officer of the regiment in question, observed the supervention of the early signs of sunstroke. He at once obtained an open order of march, and the men gave no more symptoms. Overcrowding in barracks will act in a still greater degree.

Nature of the soil.—A sandy soil is by far the hottest to encamp on. The heat of Sibi and the Lower Bolan is such that even the natives leave the place during the hot weather. Schubler gives the relative powers of heat absorption of the different soils, as follows:—

Power of retaining heat	100·0
Sable calcaire	100·0
Gypse	73·2
Argiles	66·7
Calcaire	61·8
Humus	49·0

State of the atmosphere.—A *moist air* is far more provocative of heat stroke than a dry heat. *Moist air*, *absence of wind*, and *hot winds* are all predisposing causes. The terrific moist heat of the Persian Gulf affects the native residents there severely.

DIRECT CAUSES.—Four different theories are held:—(1) *The caloric theory* attributes the attack to the action of intense heat alone. The heat is supposed to disturb the regular action of the heat-regulating centres of the body.

(2) *The autotoxic theory* states that a high temperature causes the blood to become poisonous to the nerve cells, especially those of the vasomotor centres and cardiac ganglias.

(3) *The chemical theory.*

(4) *The microbic theory.*

Before discussing some of these theories, I will now proceed to the subject of treatment. The treatment is *preventive* and *curative*: of the two, the former is by far the most important.

A. PREVENTIVE MEASURES.—In all cases where the soldier or traveller is exposed to a hot sun, alcoholic drinks should be eschewed, and tea or coffee be the chosen beverage. The good effect of tea is clearly perceptible, when we consider that the sun's action diminishes the action of the skin, lessens nervous activity, causes less carbonic dioxide to be exhaled, and induces cardiac paralysis. In their action, tea and coffee have exactly opposite effects; and, moreover, they both counteract the onset of fatigue, so deadly a factor in heat stroke.

As to *dress*—(*a*) *The head-covering.*—In the writer's opinion, the best protection against the sun is afforded either by the lungi with spectacles or the solah-topi. As an article of military dress, the ordinary cork or wicker helmets are more or less admirably adapted to form sun-traps. Common-sense in this particular would seem to be now more prevalent. In the late Burmese War our men were allowed to wear solah-topis, and again in Egypt. But this has not always been the case. I recollect an officer, who was liable to the effects of the sun, being forbidden to wear a solah-topi in Afghanistan. He, however, solved the difficulty by losing his regimental helmet; and as he could not go without a head-covering of sorts, and as there was no regimental hatter in Afghanistan, he had perforce to wear his topi. Our men cannot see to aim properly in their regulation helmets: they therefore take them off when so engaged, and sunstroke results. Again, the Wolseley Egyptian helmet was spoken of highly in the last Ashanti Expedition by the present Director-General of the Army Medical Department, as being of an excellent shape, very light, and affording efficient protection. Another excellent head-covering was the grey topi served out by the Ordnance Department for the working parties in the Dongola Expedition. In Afghanistan I was attached at one period to a mountain battery. The grey Elwood helmet was worn, and I found it far superior to the regulation white helmet I afterwards wore. Dr. Tuson has invented a special helmet with an air chamber going round the head, which is said to be efficacious. Lastly, old European residents in Egypt, whenever they go into the desert on a shooting expedition, are accustomed to wear under their helmets a tight jean skullcap, similar to that worn by the Arabs under the turban or tarboosh, and find that it greatly diminishes the penetration of the sun's rays.

(*b*) Next to the head, it is most important to protect the eyes, by the use of neutral-tinted spectacles.

(*c*) And, finally, the spinal cord must not be forgotten. A thick woollen pad sewn into the coat should be worn.

(*d*) The dress must be loose round the neck, chest, and abdomen. The *material* should be a light woollen one, or khaki serge; cotton is not advisable, being a great conductor of heat; wool, on the other hand, is a slow conductor. As regards *colour*, some experiments formerly made at Aldershot showed the least absorbing colour for the direct heat of the sun to be white, then grey, yellow, pink, and black. But this question of colour leads me now to speak of the special prophylactic measures alluded to at the beginning of this paper. Before, however, proceeding to narrate these, perhaps I may be permitted to narrate the history of my own experience under a tropical sun. In August 1880 I had returned in the rudest of health from six months' sick-leave to New Zealand, having been invalided from Cabul. I was at once sent up on service again, and within a fortnight of landing found myself at Sibi. The heat of this place is so terrific, that the natives of these parts have a saying expressive of surprise that the Deity made Hell when Sibi was at hand. From Sibi I marched through the Bolan to the Pishin Valley, a plateau of between 5000 and 6000 feet high. The day after my arrival here I took part in a small expedition against a recalcitrant village. On returning to camp I was seized with a splitting headache. This increased hourly; intolerance of light next appeared, and I was fast lapsing into unconsciousness, when I luckily fell into the hands of my friend, Surgeon H. Armstrong, now of the Madras Sappers and Miners, who promptly shaved my head, blistered me, and saved my life. For the next six weeks I was tormented, without ceasing, with the most intolerable pain in the head, but, under the unremitting care of Surgeon W. K. Hatch, I at length sufficiently recovered to be able to be sent home. After sick-leave for two years, I returned to Mean-Mir, but with the onset of the hot weather the same distressing head pains, accompanied by a temporary attack of hemiplegia, set in, necessitating six months' sick-leave to Cashmere, during five months of which I was practically never free from headache. In 1901, whilst in medical charge of the Queen's Own Corps of Guides in the Black Mountain Expedition, I was again attacked by the sun in the same way, and had to take five months' sick-leave to Simla. On returning to duty at Holi-Maidan, I was again unfortunate enough to be incapacitated by the sun whilst visiting an outlying dispensary, and had to take two years' sick-leave to England. And between 1880 and 1901, as each succeeding hot weather came round, the headaches, from any exposure, continued to harass me. On my return to duty I read one day a letter from an executive engineer in the "Pioneer" on the prevention of sunstroke. This officer had had three attacks of sunstroke. He had then come to the conclusion that the dangerous rays of the sun were not the heat rays, but the chemical. His argument was based on the fact that no one ever gets heat stroke from exposure to a dark source of heat, or one where the luminous rays possess no degree of chemical energy, *e.g.* the furnaces in an arsenal. In scientific language, the actinic rays are the dangerous ones; they will pierce through anything except a layer of colour, interposed to act as a filter. He therefore argued that the only way to ward off sunstroke was to treat his body as a photographer treats his plates, and envelop it in red or yellow. He therefore lined his helmet and coat with yellow, and, after five years of extreme exposure, had no further sun attacks. Acting on this theory, I lined my helmet with orange-red flannel, had a similarly coloured pad sewn into the inside of my khaki coat at the back, and wore an orange-red shirt always when on the line of march. I never again felt the effects of the sun. I would therefore strongly recommend similar measures to be undertaken by any officer who cannot stand the direct heat of the sun.

Next, it is important to recognise the *onset of premonitory symptoms*, as prompt measures may ward off an attack. Such symptoms as headache, irritability, giddiness, more frequent micturition, and an unusually dry and hot skin, have been noted in regard to this aspect of the case.

B. Curative Treatment.—On the occurrence of heat stroke, the patient should be moved into the shade where possible, his clothes opened, and cold water from a mussack be poured on to his head and neck. Ammonia should also be applied to his nostrils. The douche must be repeated until a favourable effect be produced. A turpentine enema should also be administered, and a large mustard poultice applied to the chest. The late Dr. Norman Chevers strongly advocated planing the head with ice, where the latter is obtainable. This, however, should not be used in cases where the skin is cold and the pulse feeble. If convulsions occur, a few whiffs of chloroform are indicated. In the form characterised by the long persistent subsequent head pain, blisters to the shaved vertex and nape of the neck, with quinine, give some relief, but time is here the chief remedy.

In Italy, in cases of direct heat stroke, the administration of a solution of trinitrine (1–1000), twenty drops to water, 4500 minims, every quarter of an hour, until the complete disappearance of the symptoms, has been found successful.

As regards *venesection.*—This has been advocated by some practitioners. But, impressed by the eloquent words of the late Professor Maclean as to the invariable fatality induced by this proceeding, I can offer no opinion as to its usefulness, as I have never dared to abstract blood. *Lastly,* any one who has once suffered severely from heat stroke should not return to the tropics.

And now, finally, a few words may be said as regards the *microbic theory.*—This ingenious theory has been strongly advocated by my colleague, Dr. Sambon, who considers the subject of heat stroke under two conditions, namely, *heat syncope* and *siriasis.* Siriasis he holds to be an infectious disease, characterised by hyperpyrexia, profound coma, and intense pulmonary congestion, with an exceedingly high mortality. Dr. Sambon holds it to be a specific infectious disease, due to a microbe, on the following grounds:—*The suddenness of its onset; its chief occurrence by night; its relapses; its geographical distribution,* the endemic area being limited to the lowest regions, coast districts, or valleys of great rivers; *its occasional epidemic prevalence; the comparative immunity enjoyed by natives and old residents over new comers; the meteorological conditions,* the disease not especially coinciding with the hottest days; and the *morbid anatomy,* showing the parenchymatous changes met with in acute infections.

I am loth to criticise this fascinating theory of Dr. Sambon, but I cannot help pointing out, with reference to it, that—

(*a*) The *suddenness* of attack can hardly be held to prove any given disease infectious. An apoplectic attack is not infectious.

(*b*) In my experience, the *time of occurrence* has been chiefly during the day.

(*c*) As regards *relapses,* any one who has had an attack of heat stroke is rendered thereby predisposed to another, but I have not noticed the occurrence of relapses properly so called.

(*d*) As regards *geographical distribution,* the cases that I have seen have not been in the lowest regions, the coast districts, or valleys of great rivers: my own first attack occurred between 5000 and 6000 feet, my last in the Black Mountain district. Major Cunningham, I.M.S., also has shown from the official tables that the very lowest ratios for heat stroke are given by the Burma Coast, the Bay Islands, and the West Coast—the lowest regions of the twelve geographical districts into which India is divided for statistical purposes.

(*e*) As regards the *meteorological conditions,* these tables also show that the greatest mortality from heat stroke exists in the Punjab, Scinde, and on the N.-W. Frontier—the hottest parts of India. Again, I have never, during my service in India, experienced any *epidemic* outbreak of the affection. Coloured races naturally enjoy a racial *immunity;* an old resident, also, one would suppose to be less prone to attack, or he would, perchance, not be an old resident in the tropics; but, should he get an attack, he will find he has not gained immunity from any succeeding attacks, but the reverse. Again, one attack predisposes to another, and does not give immunity, as is the case with infectious diseases.

Lastly, as regards this supposed *microbe.* It has not yet been seen. Cagicol and Lapierre, it is true, have described one, but their observations have not been confirmed. Stiles, of Edinburgh, injected blood from patients suffering from sunstroke into a healthy subject without causing any reaction, thus excluding the presence of any toxine. Owing to these considerations, I feel I must reject the microbic theory, as far as India is concerned.

As regards the sequelæ, I may mention in my own case the onset, for at least a year after the primary attack, of most distressing attacks of palpitation of the heart, with a feeling of impending dissolution. These I have not noticed as having been previously recorded.

EXCISION OF THE CÆCUM.

By D. Lowson, *Hull.*

Resection of various parts of the intestine and stomach has been followed by considerable success, more especially since the introduction of Senn's decalcified bone plates and Murphy's buttons, and also since the more perfect management of end-to-end stitching. Removal of the cæcum, however, is not a common operation, or at least few such have been published; but it has been my good fortune to have three cases of the sort pass through my hands, one of which was published ten years ago: two others have never been recorded in any of the medical prints, but one was read before one of our local Societies in Hull, but of the third, unfortunately, I can find no record.

Case 1.—My first case became an in-patient of the Hull Royal Infirmary in 1892. He had, before admission, on two occasions passed a large quantity of blood per rectum, at first bright red and copious, but gradually ending in smaller quantities of a dark tarry colour and consistence. On admission, he stated he had lost 7 or 8 lbs. in weight, yet on the whole he looked well, was muscular and well formed, but admitted he had led a "rackety" life, having associated much with low-class betting men, and having been also a frequenter of low public-houses and dram-shops. He had never suffered from any symptom of obstruction, nor were there any gastric or intestinal troubles besides the already mentioned hemorrhage. On the right side of the abdomen, level with the umbilicus, was both seen and felt a large mass the size of a cocoanut, hard in its consistence, easily movable laterally, not tender to the touch, and with little spontaneous pain. The urine was healthy, and the liver was normally sized and easily separable from the tumour below. Dulness on percussion existed in and out over the greater part of the growth, but the intestine seemed to cross the lower end of it, ascending up from below and passing to the inner side of the mass. The absence of renal and hepatic symptoms and the existence of intestinal hemorrhage seemed to indicate the intestine as the seat of the disease, while the situation of the tumour itself pointed to some part of the ascending colon.

On opening the abdomen, the cæcum was seen to be unaffected, but a large hard mass involved the middle reaches of the right colon; the omentum was adherent to it anteriorly, and had dragged the transverse colon across the lower end of the tumour, and was evidently the cause of the tympanitic note heard on percussion in that situation. I will reserve the description of the operation, as it was in the main the same as in Case 2, except that, as the Murphy button had not been introduced at this date, Senn's lateral plates were used, three-fourths of the right colon being removed with the cæcum and 4 in. of small intestine, the end of colon and ileum being both closed by a double row of stitches, and the small intestine and transverse colon united laterally by Senn's plates. The patient suffered much from shock, but gradually rallied, made a good recovery, and he is living now and leading a life as unregenerate as ever. Less than six months after the operation he undertook to run a race with a younger opponent for £5, and carried off the prize. When last seen he had put on a large amount of flesh, and looked fat and rosy. By some oversight the tumour was thrown away, so that its nature was never ascertained microscopically. It was hard and nodular, and filled without occluding the bowel. At the time I had little doubt it was a malignant growth, but as it has not recurred all this time (ten years), one cannot help questioning the accuracy of this opinion.

Case 2.—R. W. S., a railway employee, æt. 40, had for ten years felt something wrong in his right iliac region, and for six or seven years observed a swelling there—small at first, but slowly and gradually increasing in size. The regular evacuation of his bowels had also been disturbed, and on many occasions he had suffered from severe attacks of intestinal colic. Apart from this, he had always enjoyed good health, and he had the outward appearance of a healthy man. On the third of June 1897 he called in his usual medical attendant on account of a recurrence of the abdominal pain, similar to what he had formerly so often experienced. He was found in bed lying on his back, with his legs drawn up, his face pale and pinched, his skin moist and cold, pulse small and weak, but temperature 102°. He was suffering from intense pain, which he referred to the swelling in the right iliac region. The growth on palpation was most distinct, and its situation seemed to the surgeon to correspond as nearly as possible with the normal seat of the cæcum, but ascending upwards some distance in the course of the colon, and ending a little above the level of the umbilicus. Constipation was absolute, and there was a slight degree of meteorism, no flatus passing, and, so far, he had not vomited.

Opiates were administered to relieve immediate symptoms, and he was restricted to small quantities of liquid food: ultimately the obstruction yielded, and several copious fluid evacuations relieved him for the time. He was kept under treatment for a fortnight, and although the anodynes were left off, no pain was felt during the rest of the time, and he was consequently allowed to go back to his work. In the beginning of the month of July he had another attack, with the same kind of symptoms—pain, constipation, and rather severe collapse. The swelling seemed to occupy the cæcal region as before, and was distinctly larger. It was found on this occasion that handling the swelling gave relief, and that, soon after, a large quantity of gas gurgled through and was emitted per anum, leaving the swelling much smaller, and now the same size as when seen in June. This time he remained under the doctor's care for ten days. I saw him for the first time on the 10th of July, and extracted the above history. In addition, I may add that the lungs and heart seemed healthy, the liver was of normal size, the urine was free from albumin and sugar, and there was neither blood nor slime in the evacuations. The swelling was well defined, firm in consistence, but by no means of a stony hardness, rather tender on handling, of the shape and size of a slightly enlarged kidney, with a notch on the inner side, and situated over the ileo-colic junction. It might easily have passed for a kidney, displaced downwards, and fixed by adhesions in an abnormal situation, for there was but little mobility in any direction. Several large enemata failed to reduce the size of the swelling, and therefore "impacted fæces" was excluded. The sickly sensation generally felt on pressing the kidney was not elicited, and, in addition, I thought I could feel the end of the kidney in the usual position, just peeping from below the ribs. On the whole, it seemed like some cæcal tumour, but its duration of ten years was against its malignancy. The great difficulty in reaching a diagnosis in such a case is illustrated in a paper by Dr. Rolleston and Marmaduke Sheild, read before the Clinical Society of London, where it is stated that the members of the staff of St. George's Hospital had great difficulty in diagnosing a similar case. "Various opinions were expressed regarding the nature of the tumour, most being in favour of its renal origin. Suggestions of malignant disease of the bowel, impacted fæces, and a wandering spleen, were also made." In any case, the frequency and severity of the attacks of pain and the danger of complete and persistent occlusion of the bowel, in addition to the lingering suspicion that in spite of the long history it might yet have some malignancy in it, made it clearly advisable to open the abdominal cavity, and see if by any means the growth could be got at and removed.

The patient having consulted his friends, and having given his full consent that I should do whatever I deemed best, he was at once placed on the table, and the operation carried out as follows:—A 5 in. incision was made through the abdominal wall. The muscles and aponeurosis were densely infiltrated over the most prominent part of the swelling, and, afraid lest I should open into a pus-containing cavity, and perhaps defile the peritoneum, I opened the serous membrane at the very uppermost end of the incision and introduced the finger. It was then clear that the mass was adherent to the anterior parietes over a considerable area, but as there was no sign of pus, I quickly separated the adhesions and completed the line of incision. The tumour was now seen to occupy the right iliac fossa, and, a long adhesion still remaining unsevered on the inner side of the incision, which was evidently old and non-vascular, I snipped it through without ligature. The omentum had also to be separated by scissors and ligature. The whole growth now lay fully exposed, the size of a small cocoanut, of dense fibrous consistence, the ileum entering the mass on the inner side, and the colon issuing from it above. In order to separate the mass I opened the peritoneum, covering the posterior abdominal wall, on the outer side of the colon, and slit it up as far as the kidney and again across below the cæcum. The latter, with the ascending colon, was now pulled off its bed and turned inwards, that is, to the left. The serous layer on the back of the abdomen on the inner side of the colon was next tied off and separated by scissors from the colon down to the entering ileum, and the latter was in the same way separated from its mesentery for 3 in. The tumour was finally peeled off the iliac fossa, and one or two small vessels secured. We had now a free loop consisting of a small bit of ileum together with the tumour (in which was the cæcum), and, in addition to this, a short piece of colon above the tumour, about 2 in. This loop was now drawn out of the abdomen and slung free over the loin. The clamps were next applied, one round the uppermost part of the freed colon and the other round the ileum. Colon and ileum were now divided, and the tumour thus completely detached was thrown aside. Both cut ends were carefully washed and disinfected. The open end of the colon was completely closed by a double row of stitches, the outer being discontinuous Lembert's, while half a Murphy button was placed in the open end of the ileum and retained by a purse-string ligature. A straight incision was then made on the anterior aspect of the colon, a little above the closed end, and into this the other half of the Murphy was inserted and similarly retained. The two half Murphys were now brought together, placed face to face, and pushed home. The hole in the mesentery was finally closed, and the whole carefully washed and the abdominal wound entirely stitched up. There was nothing remarkable in the convalescence. The button was passed on the 29th day.

Though some surgeons have raised objections to the button, for various reasons, I do not think any better plan exists when it is desired to implant the end of the ileum on the colon. The natural forces of the small gut forces the button in the way we desire it to go. If care is taken to clean the bowel out before the operation, the contents are too liquid to cause a block; kinking is unlikely in this situation; and even if rotation and a block takes place, one has only to wait a little and the button will be forced into the great bowel, after which there is no danger of any further obstruction. In the paper already referred to, Mr. Sheild stitched the small gut and the colon end to end, and the consequence was that, where the straight line of sutures joined the circle of sutures round the end of the ileum, there was a corner, and consequently a weak point. He was saved by having introduced a carefully placed gauze drain. "On the twelfth day," he tells us, "the discharge, which had hitherto been serous, became distinctly feculent," though no harm resulted. With the Murphy, however, in my case, introduced at some distance from the line of sutures closing the colon, I was not afraid to close the abdominal wound completely, leaving no drainage of any kind. In lateral anastomosis a double row of stitches is probably the best. It seems almost a "toss-up" in such cases whether the metal button passes the right way into the next coil or is driven into the blocked intestine, where it lodges until the patient dies or until a second operation is undertaken for its removal. In end-to-end union of great intestine it is absolute madness to use the button. The danger of blockage by fæcal masses is too great a risk to be run; and the same remark applies to lateral union between different parts of the colon. In using Murphy button for end-to-end union in the case of small gut to small gut, there is also considerable danger, as the intestine gets gradually smaller towards the ileum, and if there has been any obstruction before the operation, the gut below has been getting narrower and narrower for some time before, on account of being more or less empty of contents, and obstruction is all the more likely to occur, before the button forces its way into the colon. I had one example of this in the case of a gall stone, certainly not larger than a medium-sized button. It was arrested 2 ft. above the valve, and throughout these 2 ft. the bowel was not larger, I think, than a goose-quill. I should therefore be afraid of introducing the Murphy button where there has been several days' obstruction and the bowel contracted below the point of obstruction.

The growth itself was examined by the Clinical Research Society, who reported it to be a non-malignant lymphoma.

PSORIASIS: A CLINICAL RECORD.

By Chalmers Watson, M.B., F.R.C.P.Ed., *Edinburgh.*

(Plate XIII.)

In the *British Medical Journal* of March 22, 1902, the writer published a preliminary communication on the treatment of deafness of middle ear origin, the basis of the treatment being the use of a preparation of bone marrow. It was there pointed out that the use of this preparation in cases of chronic non-suppurative middle ear disease was a particular application of a general theory regarding the function of the bone marrow. In broad outline this theory is, that the bone marrow produces an internal secretion of vital importance in the economy; that this substance is prophylactic against the injurious action of various bacteria which in health exist as saprophytes in different tissues; and that its defective production is liable to be followed by pathogenic action

PLATE XIII.

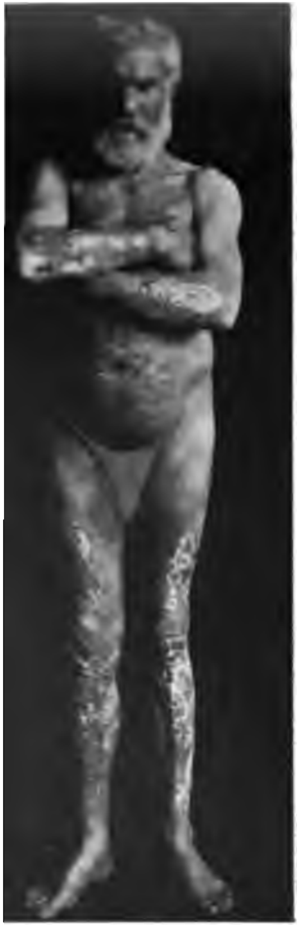

Fig. 1.—Before treatment.

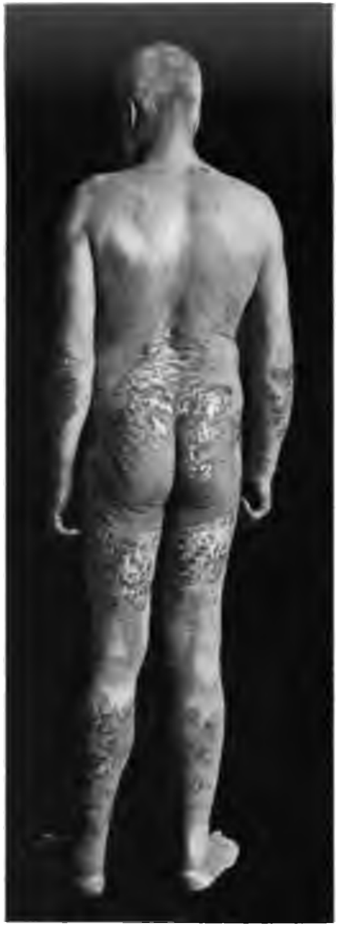

Fig. 2.—After three weeks' local treatment of the arms only. Note the thick crusts still present on the heels.

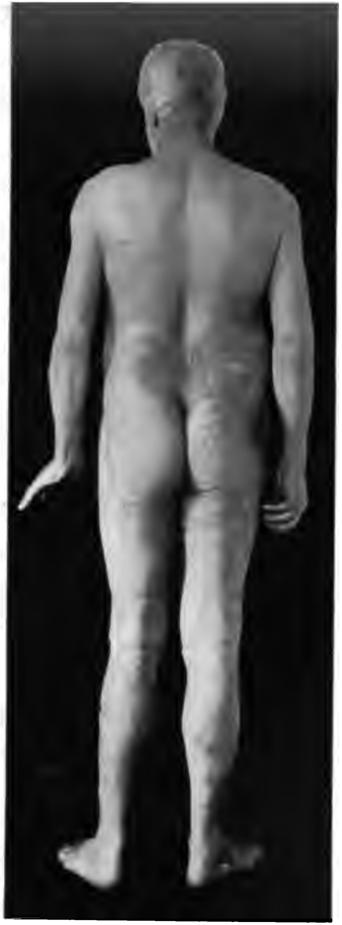

Fig 3.—After eleven weeks' local treatment of the arms—for comparison with Fig. 2.

of these same micro-organisms. The results of this pathogenic activity vary much in different subjects, in accordance with *the all-important factor of individual reaction.* As the main sites of these bacteria are the respiratory tract, skin, alimentary canal, and vagina, it follows that diseases will be more or less directly associated with one or other of these surfaces as the main source of infection. In the writer's opinion, the chronic aural disease under consideration is to be regarded as *a chronic infection from the naso-pharynx.* The principles underlying its treatment, with a record of later results of treatment, were described in the *British Medical Journal*, September 1902. In the *Lancet* of October 18, I recorded the results of treatment, along similar lines, of a series of five cases of psoriasis, this disease being regarded as *a chronic infection from the skin surface.*[1] The after history of these cases, and also the results of a more extended trial of the treatment in this disease, will be furnished in a later communication. The special object of this communication is to place on record certain clinical facts noted in one of the severe cases that was under observation, particularly—(1) The coexistence of deafness of internal ear origin; (2) the marked polyuria with incontinence of urine; and (3) the intercurrent febrile attack with an adenitis. Attention is further drawn to the fact that in the course of treatment other symptoms of disease (including 1 and 2 above), not apparently connected with the skin eruption, underwent a marked improvement coincidently with the disappearance of the skin eruption. While the data at our disposal are insufficient for formulating a definite opinion regarding the relationship of these other symptoms to the psoriasis, the marked improvement that took place suggests the possibility that the relationship may be an intimate one.

Case 1.—A. M., vagrant, æt. 63, admitted to Craiglockhart Poorhouse on 9th March 1902, suffering from extensive psoriasis of ten years' duration. The eruption first appeared on the thighs, and gradually extended to other regions. It was accompanied by a considerable degree of irritation of the skin.

Previous health.—Patient had always enjoyed good health. He had been accustomed to take liquor, sometimes to excess, but stated that indulgence in liquors, or abstinence from them, had exercised no apparent influence on the course of the disease. There was no history nor evidence of syphilitic infection. For some years his hearing power had been defective. In the course of the past year, when engaged at work as an engineer's labourer, he had found that his general strength was beginning to fail, as he could not do heavy manual work with the same ease as formerly. No information regarding hereditary influence was available.

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[1] In this connection it is of interest to point out that the most recent investigations into the histo-pathology of this disease furnish evidence which goes some way to support this view. Munro points out that the primary lesion is exactly analogous from the histological point of view to the formation of a small "dry" abscess at the surface of the horny layer. The primary psoriasis, according to Munro, differs in nothing from a microbic abscess, except that its localisation is so superficial that it is produced almost outside the organism (quoted by Malcolm Morris, *Brit. Med. Journ.*, London, October 25, 1902).

Present state.—An extensive psoriasis eruption was present on the anterior aspect of the body—on the forearms, thighs, and legs, with isolated smaller areas over the abdomen and sides of the chest (see Plate XIII., Fig. 1). A similarly widespread lesion involved the skin of the posterior aspect of the body, notably the lumbar region, thighs, legs, and heels. The skin of the lumbar region was very much thickened, deeply furrowed, and covered with characteristic thick white crusts, which, when detached, revealed a surface which was dull red in colour in the region of the buttocks, and brighter red in the lumbar region. The patient stated that for a long time he had not been able to stoop with comfort, owing to the extremely rigid state of the skin in the lumbar region. The extent of the eruption is indicated in the photograph (Plate XIII., Fig. 2), taken after three weeks' treatment, which, it should be noted, was restricted to *a local application to the forearms only.* This treatment had effected the removal of most of the coarse scales from the legs, thighs, and lumbar region, and also a lessening of the deep furrowing in the lumbar region, which, however, is still visible in the figure. The skin of the unaffected areas was markedly dry and inelastic. The hair of the head was thin and unnaturally dry, and there was an area of over 2 in. square on the vertex where the hair had almost entirely disappeared. The nails showed much pitting, with irregularity in the markings.

Other systems—Cardio-vascular.—The rate and character of the pulse was noted three times on one day when the patient was in bed, the rates being 63, 68, and 66. The morning and evening frequency of the pulse was subsequently noted for five days before treatment was begun: the ten readings ranged between 78 and 86. There was no abnormality in the heart sounds. The patient was the subject of severe varicose veins (see Plate XIII., Fig. 1).

Renal system.—For a considerable time prior to his admission, the patient had been much troubled with increased frequency of micturition and inability to hold his water for any length of time. Within the last year this symptom had become so pronounced, that extreme inconvenience had frequently been experienced by the patient in his wanderings on the street. This symptom was present by day as well as by night, and led the patient to micturate five or six times during the night and more frequently during the day. The total urine was collected for three consecutive days before treatment, the records being 116, 108, and 106 oz., of an average sp. gr. of 1016. There was no albumin nor sugar.

Gastro-intestinal tract.—The motions were observed daily, and were noted to be frequently very dark in colour, imperfectly formed, and very offensive in odour. It should be stated that the patient's diet included a liberal supply of porridge.

Special sense—Ear.—The external ears and the tympanic membranes presented a normal appearance. The tuning-fork reaction showed that air conduction was better than bone conduction on both sides. The defect in hearing was thus of "nerve" origin. The other systems appeared to be normal.

TREATMENT AND ITS RESULTS.—Treatment was begun on 19th March, and consisted in bathing the forearms in hot water, with a little bicarbonate of soda added to it, until the scales were removed, and a good, but not excessive, vascular reaction was established. The arms were then carefully dried. About half an ounce of 50 per cent. myelocene,[1] previously liquefied and warmed, was then applied to the skin of the forearms, and rubbed well into the parts in the manner best calculated to promote absorption. The latter operation involved about ten to fifteen minutes for each arm. No further treatment was adopted.

The diet was the ordinary one of the hospital ward in a workhouse, and included a liberal supply of porridge, which is frequently regarded as an article of diet to be avoided in such an extensive skin lesion. The treatment extended over two and a half months, and in its course particular attention was paid daily to the amount of vascular reaction attendant both on the application of the hot water and the myelocene, and the duration and severity of these applications were varied from time to time in accordance with the information thus gained. A careful daily supervision of the treatment was found to be essential to success.

Result.—Within *ten days* of the commencement of treatment there was a material improvement in the texture of the skin of the affected areas all over the body. The skin was softer and more pliable. In this period many large coarse scales had spontaneously shed, leaving the surface perfectly clean or covered with very fine scales.

At this stage the varicose condition of the veins had distinctly lessened. This improvement could not be attributed to rest in bed, as the patient was not confined to bed for the first month of treatment, whereas he had been in bed for three weeks immediately prior to the taking of the photograph (Plate XIII., Fig. 1).

Fig. 2, Plate XIII., shows the condition of the posterior aspect of the body after *three weeks'* treatment. The general improvement was in reality more marked than is apparent in the figure. The rate of progress subsequently increased. The condition of the skin of the abdomen and flexor surface of thighs and legs was at this time equally satisfactory. After this date the rate of improvement slowed down. About this time there was a fresh eruption on the flexor aspect of the forearms, which was possibly a result of over-treatment.

Fig. 3, Plate XIII., shows the condition of the posterior surface of the body after eleven weeks' treatment. The whole skin was then of normal texture, and indeed probably of softer consistence than was normal to the patient. The skin was also free from pigmentation, except that which was natural to the patient as a vagrant, and which is visible in Fig. 2 in the healthy skin of the back. The eruption had now entirely disappeared from the whole body, with the exception of a few flat pale spots on the upper part of the buttocks and on the flexor aspect of the forearms. The soles of the feets and heels had been the last to improve. The cutaneous irritation was considerably diminished after a fortnight's treatment, and after five weeks had completely disappeared.

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[1] The diluent used was almond oil.

The urinary derangement.—After six weeks' treatment the patient stated that he now had more control over his micturition both by day and night. Whereas prior to treatment he had been in the habit of going to the urinal nearly every hour in the day, and five or six times in the course of the night, he now passed water not more than three or four times in the course of the day, and not oftener than twice between 10 P.M. and 6 A.M. This improvement was maintained so long as the patient was under observation. The treatment appeared to influence the total amount of urine voided, the amount being at first increased (March 20–27),

	March.										
Date . . .	11	12	13	20	21	22	23	24	25	26	27
Oz. of urine	116	108	106	120	134	134	138	138	144	144	146

	May							
Date . . .	3	4	5	6	7	8	9	10
Oz. of urine	105	103	108	105	103	103	103	101

and subsequently returning to the patient's normal amount (see May 3–10). The amount of water passed was very large, considering that the patient took no water or other fluid except at meals.

The average specific gravity of the urine voided in the first few weeks of treatment was slightly lower than before treatment, 1011 *v.* 1016.

The condition of the fæces.—Reference has previously been made to the abnormal appearance and fœtid odour of the stools. In the course of treatment there was a pronounced improvement in this symptom, the motions became more natural in colour and much less offensive. They did not, however, reach a healthy standard, although they possibly became as normal as could be expected from a diet in which one meal was composed entirely of porridge, taken in a very large amount.

The hearing faculty.—Four weeks after treatment had been in operation, the resident physician, Dr. J. A. Douglas Thompson, observed that a conversation could now be carried on with the patient more easily than formerly. When spoken to on the subject, the patient stated that he himself a few days before had heard the ward clock strike the hour, for the first time since his admission to the ward six weeks previously. This improvement became more marked, and, as a rule, he later heard the clock strike every hour during the day. Coincidently an improvement in the hearing power for ordinary conversation became obvious to the attendants in charge of the ward, as well as to the patient's ward companions. This improvement persisted so long as the patient was under observation.

The varicose veins.—Reference has already been made to the amelioration that occurred in the condition of the veins of the legs in the early stages of treatment. The improvement was shown by a photograph taken after six weeks' treatment. It is not advisable to theorise regarding the causation of this improvement, but mention should be made of other two changes which occurred simultaneously with it. There was (*a*) a marked improvement in the flexibility of the skin generally, and (*b*) a distinct alteration in the character of the peripheral circulation, the change being mainly a relaxation of the arterial wall, with slight increase in pulse rate.

Temperature.—Before treatment, and for the first fortnight of the course, the patient's temperature (axillary) was subnormal, the average being 97°·4. An acute febrile attack occurred on 12th April, and for some time subsequently the average temperature was distinctly higher than the figure just quoted. On the morning of 12th April, the patient felt out of sorts and had a feeling of discomfort in the right groin. During the following night he felt at times "shivery," and at times "hot," and felt pain in both groins. On the morning of the 13th he looked pale and worried, pulse 108, respiration 22, had a bad taste in his mouth, and a painful enlargement of the inguinal glands in both groins, more especially on the left side, where the skin covering the glands was tense and of a delicate blue tint. Two hours later the pulse was 90, respiration 24. The amount of urine voided showed an increase rather than a diminution in quantity. Notwithstanding these acute constitutional symptoms, the general condition of the skin was very favourable, the diseased areas being actually paler and more natural looking than ever previously. The treatment was not interrupted. These temperature changes are specially instructive if compared with similar changes recorded by the author in an earlier communication,[1] and when studied in the light of the recent observations on the histopathology of the disease.

Subsequent history.—When the last photograph was taken (Fig. 3), the eruption had not entirely disappeared. The patient left the hospital in the beginning of June, and has been seen several times since, the last occasion being in the beginning of October. The history to that date is very satisfactory. There has been no recurrence of the eruption, and the relief from the urinary trouble has persisted.

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[1] *Lancet*, London, October, 1902.

GENERAL SEPTIC INFECTION OF NASAL ORIGIN.

By A. Logan Turner, M.D. (Edin.),, F.R.C.S.Ed. *Lecturer on Diseases of the Throat, Nose, and Ear, School of Medicine, Edinburgh.*

Although the subject suggested by the above title cannot be regarded as a new one, it is one of very considerable practical importance. The possibility of general septic infection arising from an intranasal lesion may very naturally be overlooked. That a type of illness presenting a serious train of symptoms, and indeed simulating a grave pathological condition, may have its origin in some simple affection of the nasal chambers, has already been described. So insignificant, indeed, may be the nasal lesion, that the patient remains unaware of it, and his physician's attention may possibly be only directed to it accidentally. The similarity of the symptoms in one case to those of ague, in another to typhoid fever, and in a third to pulmonary phthisis, adds additional interest to the study of such cases. It is with the object of again drawing attention to the possible nasal origin of some of these obscure symptoms that the following cases are recorded:—

Case 1.—Miss A., æt. 21, was seen, at the request of Sir John Tuke, in consultation with Dr. George A. Gibson, at the end of June 1902. About six weeks before that date the patient had had a sharp attack of influenza. This passed off, but apparently she did not completely recover her usual state of health. During the succeeding four weeks, her temperature consistently showed an evening rise, and sometimes even in the morning it was above normal. In the evening, it would reach 101° or 102° F. She complained also of night sweating. Save for these symptoms and some indefinite pains in the back of the head, she was otherwise apparently in fairly good health. The question of the possible existence of pulmonary phthisis naturally suggested itself, but more than one examination of the lungs failed to reveal any physical signs in the chest.

There was no cough, but in the morning the patient was able to bring up from the back of the nose and the throat a moderate quantity of purulent-looking secretion. She did not complain of any bad taste or fœtid odour. An examination of the secretion, made in the Laboratory of The Royal College of Physicians, showed that there were no tubercle bacilli present. A culture which was made gave, however, a pure growth of staphylococci in twelve hours, while numerous other organisms could be detected microscopically. I was asked by Dr. Gibson to make an examination of the nose.

By anterior rhinoscopy, no pus was detected in either nasal cavity, nor did the dependent position of the head bring about any flow of pus into the nose. Some muco-purulent secretion was visible in the nasopharynx. The larynx appeared perfectly normal. Transillumination of the maxillary sinuses showed the left antrum to be opaque, while the right illuminated brightly. In order to thoroughly elucidate the case, it was decided to puncture and wash out the left antrum, because it presented such a distinct contrast to the right on transillumination. This was done through the outer wall of the inferior meatus, with a fine trochar and cannula. The result was negative, the lotion being returned perfectly free of secretion. Daily syringing of the nose was commenced, followed by the use of a menthol and parolein spray. The headaches disappeared and the temperature gradually fell to normal, without any irregular rise. The patient rapidly improved, and the discharge from the back of the nose gradually ceased. In the month of August she wrote to inform me that the nasal secretion was reduced to a minimum, and that she was practically well.

Dr. George Gibson has informed me of another case which he was asked to see. The patient was a lady whose condition more than one physician had pronounced to be tuberculous. Examination of the nose and throat led him to suspect these areas as the source of the infection. Suitable treatment was followed by disappearance of her symptoms.

Case 2.—Miss B. was sent to me by Dr. Moorhouse of Stirling in May 1902. He kindly furnished me with the following history of the case:—Five years before, she suffered from erysipelas of the face, and her present illness appeared to date from that time. At any rate, since her attack of erysipelas, she had always been "out of sorts and nervous," afraid to go to church or to attend public meetings of any kind. In September 1901, however, fresh symptoms developed, and she began to suffer from chills, followed by sweating and pyrexia. When examined by Dr. Moorhouse, nothing of a serious nature could be detected in the chest or in any of the internal organs. On questioning her more closely, he learnt that she complained of a nasal discharge, accompanied by an offensive smell. At the same time, there was a considerable accumulation of secretion at the back of the nose and in the throat in the morning. At that time he concluded that she was suffering from a mild form of septicæmia, in all probability due to the intranasal condition. Examination of the nose revealed nothing of an unusual nature. A nasal douche containing bicarbonate of soda and boracic acid was ordered to be used morning and evening, and very considerable improvement at once manifested itself, although some nasal discharge still continued. In November of the same year, she felt so much better that she submitted to the extraction of eight teeth. While she was under gas, the dentist perforated the left antral cavity through the socket of one of the molar teeth, but no pus was detected in that cavity. When seen by myself in May 1902, she still complained of post-nasal discharge, and had a tendency to clear her throat. On examination, nothing was found to lead to a diagnosis of accessory sinus suppuration. There was no pus in either middle meatus, and both antra illuminated. Upon the floor of each nasal cavity there was some muco-purulent secretion. The nasal syringing was continued, and a spray of 5 per cent. protargol solution ordered.

I had a further opportunity of examining the patient in January of the present year; she expressed herself as being in better health than she had been during the last two or three years, and she no longer suffered from rises of temperature. There was still a little naso-pharyngeal catarrh present.

Both these cases are of undoubted clinical interest, and we are justified in concluding, when the result of treatment is considered, that both of these patients suffered from a mild form of septicæmia with the source of infection in the nose and naso-pharynx. It is true that neither of them presented symptoms of a serious nature; nevertheless in both of them—especially the former—the symptoms were of a character to cause some anxiety as to the possible existence of tuberculosis. The importance of recognising a simple nasal lesion as the origin of symptoms which forcibly suggest the presence of phthisis, needs no comment. It is interesting to note, however, that in some of these obscure cases there may be an entire absence of any symptom or sign pointing to the presence of an intranasal affection. Not only may there be nothing to turn the physician's attention to the nose, but the patient himself may fail to recognise the fact that there is any abnormal condition of his upper respiratory passages. Hajek[1] records a case which affords a striking example of this. The patient was an educated man, who had on several occasions consulted eminent physicians regarding the state of his health. The chief symptoms complained of were general nervous irritability, and a tendency to become angered against his friends whom he most respected. He slept badly, his feet remained unusually cold, while the upper part of his body, especially his face, became congested and hot. His pulse beats were much accelerated, numbering, as a rule, from 130 to 134 per minute. At meals, the cardiac pulsations and congested state of the skin would cause him so much discomfort, that he was often obliged to leave the room. His heart and lungs had been frequently examined, but no evidence of disease had ever been detected. Apparently the patient had never complained to any of his medical advisers of his nose, and even when closely questioned by Hajek, before any examination had been made, he firmly maintained that he had nothing abnormal there. Puncture of the left antrum of Highmore and douching of the cavity was followed by the evacuation of a quantity of extremely foul-smelling pus. After the sinus had been opened and drained, all his symptoms entirely disappeared.

That the presence of a foul-smelling discharge may exist in the maxillary sinus, without the patient being in the least aware of the fact, I have had more than one opportunity of observing. In one case the fœtor was so marked when the cavity was opened, that the bystanders were compelled to stand back, the fœtor resembling that of a stinking abscess about the appendix. The patient expressed surprise afterwards, that such a state of affairs could have existed. It is evident, therefore, that the physician may receive no assistance from his patient as regards the possible nasal origin of some of these cases of general septic infection.

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[1] "Path. u. Therap. der Entzünd. Erkrank. der Nebenhöhlen."

Some years ago, Dr. William Carter[1] of Liverpool published a series of interesting cases of fever of a septic type, in which the origin of the malady remained for a long time obscure. One of Carter's patients was a medical man, living in a healthy seaside town, under conditions which were apparently thoroughly favourable, his house being a good one and well situated. Every day, about half an hour after breakfast, he expectorated with some difficulty a little mucus, after which he was attacked by rigors, which recurred daily and almost with the regularity of ague. He continued his professional work, although with much discomfort, while his axillary temperature was as high as 103° F. The persistence of this condition led him to suspect tuberculosis, but a careful examination of all his organs failed to reveal any physical signs. The only lesion that could be discovered was a catarrhal condition of the mucous membrane of the left nostril. He commenced irrigation of the nose with a strong solution of liquor sodæ chlorinatæ, and used a snuff of boracic and bismuth powder. Almost at once, after the commencement of the local treatment, the elevation of temperature ceased, and his symptoms completely disappeared. In another of the cases reported by Carter, the symptoms were of a more acute nature, and in it also the employment of antiseptics in the nasal cavities was followed by amelioration and finally cure of the condition. In a third case, the symptoms from which the patient suffered suggested the existence of typhoid fever, but examination of the internal organs showed no evidence of this. A rhinoscopic examination, however, revealed the presence of a piece of necrosed bone. After radical measures had been resorted to, there was a final disappearance of the symptoms.

As examples of general septic infection occurring in fœtid atrophic rhinitis, or ozæna, one may cite the two following examples, one reported by Permewan[2] of Liverpool, the other occurring in my own practice. In Permewan's case, symptoms of general malaise and loss of appetite were complained of. The daily temperature was always 100° F., rising in the evening to 102° or 103°, while the pulse rate varied from 100 to 110 per minute. The source of the infection could not be established, until finally the patient acknowledged that for years his nose had given him considerable trouble, necessitating the frequent use of numerous handkerchiefs. There were intervals when he considered himself perfectly well, but recurrences took place. The nose and naso-pharynx were filled with offensive crusts. The removal of the crusts, and the thorough irrigation of the nasal cavities, were followed by eminently satisfactory results, and at the end of three weeks of careful treatment the patient's general condition was excellent.

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[1] *Lancet*, London, 1895.

[2] *Liverpool Med.-Chir. Journ.*, July 1899.

The patient who came under my own care was a growing lad, who was in the habit of frequently using a thermometer of his own. He also suffered from fœtid atrophic rhinitis, and on several occasions he reported the occurrence of rigors, with his temperature rising to 103° and even to 104° F., with periods of general malaise. The authenticity of this patient's own observations was proved, as on two occasions, while he remained under treatment in hospital, similar rigors were observed. The possibility of tuberculosis and of malaria was discussed, but both were excluded. Another interesting point in this case, and one which the patient himself was able to observe, was that if irrigation of the nose was not carried out in the morning, but delayed until midday, a rigor was not infrequently a sequel. It should be added that in this case pulmonary tuberculosis developed three years after the date of the above observations.

No one can gainsay the practical interest which lies in these cases, and which certainly point to the value of making an intranasal examination in septic conditions of doubtful origin. It is possible, too, that a regular use of the thermometer might reveal more frequently the occurrence of general symptoms in septic conditions of the nasal cavities.

THE TREATMENT OF ECLAMPSIA BY RAPID DELIVERY BY MEANS OF BOSSI'S DILATOR.

By W. E. FROST, M.B., Ch.B., *Physician, St. Anne's Dispensary, Edinburgh.*

THE causation and treatment of eclampsia have for a long time past been the subjects of much controversy amongst obstetricians, and at the present time no definite conclusions have been arrived at on either point. Innumerable theories have been brought forward to account for the condition, but the majority of observers lean towards that which attributed the origin of eclampsia to a toxine circulating in the maternal blood. As to the origin of this toxine, opinions also differ. It occurs only in pregnant women, and therefore appears to be fœtal in origin. In some cases the liver is unable to destroy or break up this body, and elimination by the kidneys does not occur; hence it persists in the maternal circulation. Such is the view which now generally obtains. The certain cause of eclampsia being still problematical, empiricism in the treatment of the condition holds high rule, with the consequence that the results obtained in many cases are not satisfactory.

Roughly speaking, the lines of treatment followed may be divided into two groups—in one of which sedatives are administered, measures are employed to eliminate the toxine, while interference with the uterine contents is avoided; in the other, interference is advocated, and measures are also employed to eliminate the toxine and control the eclamptic seizures. Good results are claimed by those who employ one or other of these lines of treatment. But the fact remains that eclampsia is still a very fatal disease, and any procedure which claims to diminish its terrors deserves consideration.

In 1900, Professor Bossi of Genoa devised an instrument for the dilatation of the cervix. Amongst the indications for its use, he claimed that, in eclampsia, rapid evacuation of the uterine contents could be effected by its aid. Leopold of Dresden published reports[1] on its use in twelve cases of eclampsia. Dilatation of the cervix occupied from twenty to thirty minutes, and in no case was there laceration of the parts. In nearly all, uterine contractions commenced during the use of the instrument, and continued with increasing force into the third stage of labour. Neither labour nor the puerperium was complicated by hæmorrhage in any case. No mother died. Of the twelve children, seven were born alive, forceps having been employed in their delivery. Four had to be perforated, but all of those had died either before or during labour. Leopold considers that, in the treatment of eclampsia, Bossi's dilator will be found to be a most valuable instrument, and that eclampsia can no longer be regarded as an indication for Cæsarean section.

In the hope that they may be of some interest, I venture to publish the following notes on a case where this instrument was used for the first time in Edinburgh:—

I saw the patient, Mrs. J., with Dr. M'Donald Robertson, on the night of 6th September. She is æt. 40 years, 8-para, and was then eight months pregnant. Dr. Robertson had been called in to attend her about 7 p.m. on the 6th September. She had been suffering from severe headache since 10 A.M., and a short time before his arrival had a convulsive seizure.

When he arrived he found her semi-conscious, her pupils were small, and reacted to light to a slight degree.

Labour pains had not begun. She had had two evacuations of the bowels, and had passed urine several times during the day, but the amount was small on each occasion. He administered a 1-gr. opium pill.

He was again summoned at 10.30 to see the patient, as a second fit had supervened; the unconsciousness was now pronounced, and the breathing laboured.

I arrived at 10·30 P.M., and just as I entered the room a third seizure occurred. It began by twitching of the eyelids; the mouth was drawn over to the left side; the head rolled from side to side; and the arms, trunk, and legs became convulsed in the order mentioned, the duration of the whole phenomenon being about one and a half minutes. Immediately it had passed away I found that the pupils were moderately small and did not react to light, the pulse rate 108, and tension high; temperature 102°·4, and respiration 30 per minute. I could find no trace of œdema, and, owing to the patient having passed urine in bed, none was procurable for examination. Furthermore, as no suspicion of renal disease was entertained, the urine had not been examined previously. Abdominal examination showed the presence of a tumour reaching to a hand's-breadth below the xiphi-sternum. Vaginal examination revealed a soft os uteri, which was sufficiently patulous to admit the tip of the examining finger. Hot bottles were placed round the patient, and the skin was induced to act freely. However, as the patient was manifestly in a grave condition, more drastic measures were deemed necessary, and it was decided that emptying the uterus was the best procedure to adopt. As several vaginal examinations had been made, a long douche of 1 in 100 lysol was administered, and the vulva was then carefully prepared. The patient was now placed in the left lateral position and chloroform administered. Bossi's dilator was then introduced into the cervix, the shields having been previously removed from the prongs. Slow dilatation was continued till the index registered 3½ cms., when the instrument was withdrawn and the shields placed on the prongs. Reintroduction was easily accomplished, and dilatation continued till the index registered 9½ cms., when the instrument was finally removed. Till 8 cms. were registered, resistance to the action of the dilating screw was small, but when this point had been reached it gradually became so great that, when 9½ cms. was indicated, further dilatation required such force that it was feared tearing up the cervix might result, and hence the instrument was withdrawn. Thirty-five minutes were occupied in reaching this stage. Vaginal examination made at this point showed that the cervix had been equally dilated all round, but that a considerable rim remained. The application of forceps in preference to turning was determined on, because it afforded a greater probability of saving the life of the child, and the fœtal head could be made to act as an efficient dilator by slow traction on it, appplied through the forceps. Owing to the fact that the head was above the brim and very movable, and that the cervix was not fully dilated, application of the instrument was by no means easy. Thirty-five minutes were expended in the delivery of the head, which was born with the occiput posterior. No attempt at long internal rotation had occurred, probably owing to the small size of the head. The natural powers completed the delivery of a living female child, which developmentally corresponded to an eight months' gestation. The hæmorrhage which followed the birth was slight in amount. The placenta was expelled in about ten minutes. The total duration of the delivery was about one hour, thirty minutes. I saw the patient again at 9.30 A.M. on 7th September. She was unconscious; her temperature was then 102°, pulse 106, and tension high. She had had two severe eclamptic seizures in the interval, one at 5 A.M. (three and three-quarter hours after delivery), and a second at 7.30 A.M. The duration of both was over two minutes. The hot pack was employed, and profuse sweating resulted. The urine, which was drawn off, amounted to 6 oz. On examination, it was found to contain 3 grms.

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[1] *Arch. f. Gynæk.*, Bd. lxvi.; *Centralbl. f. Gynæk.*, May 1902.

per litre of albumin, some blood, granules, and blood casts; the urea amounted to 1·2 per cent. The patient was seized with an attack at 10 A.M., two in rapid succession at 12.15 P.M.; the first of those was slight, the second severe. Again at 12.45, at 2.45, and at 3, slight seizures occurred. At 4 P.M. an enema was administered, and hot bottles placed round the patient. Recurrence of the attacks were observed at 6.40 P.M., 7 P.M., 7.15, and 7.20, each one becoming less and less severe, till the duration of the last did not exceed a few seconds. At 7 P.M. the temperature was 100°·8, pulse 100. At this time 8 oz. urine was withdrawn. At 9 P.M., when I again saw the patient, I found that the temperature had risen to 104°·2, and pulse to 120; the patient was profoundly unconscious, her pupils were pin-points, and gave no reaction to light.

By 11.15 P.M. the temperature had fallen to 101°·2, and pulse to 106. Next morning the temperature was 99°·4, pulse 86, tension high; the patient was still unconscious, but the pupils were large and reacted slightly to light. No eclamptic seizure had occurred since 7.20 the previous evening. The urine was again withdrawn, but unfortunately the quantity was not estimated, On examination, it was found to contain 0·75 grm. per litre of albumin, a trace of blood, while the urea had risen to 2·5 per cent. By 7 P.M. the patient showed some signs of returning consciousness, which manifested themselves by opening the eyelids when spoken to and slight movements of the arms and facial muscles when the face was flicked. On the morning of the 9th, patient's temperature was 98°·4, pulse 106. She was then sufficiently conscious to swallow a little milk. She had a trace of jaundice in the form of a yellow discoloration of the conjunctiva. An examination of the urine showed that it contained 0·5 grm. albumin per litre; the test for blood gave negative result. Gmelin's test for bile pigments showed that they were present. By evening the patient could speak, but in a low faint voice. The jaundice was now very pronounced. She was taking milk freely. A good night's rest followed, and by morning the patient was fully conscious and interested in her surroundings. The jaundice was still very marked. Temperature 98°·4, pulse 106. The urine contained 0·5 grm. albumin per litre, and was greenish in colour. Gmelin's test was very easily demonstrated.

The subsequent history of the case does not call for detailed description. The jaundice disappeared four days after its onset, and on this day the evening temperature rose to 100°·4, and pulse to 108. Subsequent to this both became normal, and have remained so. Owing to the exhaustion produced by the eclamptic seizures, and to the restricted diet on which the patient was necessarily placed, her convalescence was slow. She left her bed twenty-five days after her delivery, and since then has gradually recovered her strength. At present she is sufficiently well to undertake all her domestic duties. The infant has also progressed favourably. Examinations of the urine from time to time always demonstrate the presence in it of minute traces of albumin; the specific gravity varies from 1018 to 1022. At present there are no signs of œdema on any part of the body, nor is there any cardiac hypertrophy.

The onset of the eclamptic seizures appears to be due to the presence of an unsuspected kidney lesion; further confirmation of this view is afforded by the persistence of the attacks for eighteen hours after delivery of the child. With the exception of 1 gr. of opium, which was administered before my arrival, no sedatives were employed in the treatment. If the toxine which produced this disease is due to the presence in utero of a fœtus, removal of the latter as rapidly as possible, together with treatment directed towards freeing the maternal circulation from the toxic body then present in it, should be sufficient to control the eclamptic seizures. It was on this principle I acted in dealing with this case. The administrations of opium, chloral, chloroform, thyroid extract, etc., tend in my opinion to lead to wrong conclusions as to the part played by rapid dilatation of the cervix and delivery of the child in cases of eclampsia.

REVIEWS OF
BRITISH AND FOREIGN LITERATURE.

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A Text-Book of Pathology. Edited by Ludvig Hektoen, M.D., and David Riesman, M.D. Philadelphia and London: W. B. Saunders & Company.

We have approached the perusal of this work with considerable interest, for two chief reasons. In the first place, it has been produced in America, where some of the best research in pathological science within recent years has been done; and, in the second place, it is a conjoint work, nearly twenty authors having contributed one or more chapters. Even in a treatise of this size, amounting to over 1200 pages, an exhaustive treatment of the whole subject of pathology cannot be expected; all that one can reasonably look for, is a lucid and comprehensive exposition of pathological processes and the changes in the chief diseased conditions, such an exposition as will indicate an intimate practical knowledge of the subjects treated on the part of the writers. We shall first give an outline of the scope of the work, and afterwards state to what extent the requirements stated have been fulfilled. The introductory chapter embraces such subjects as the divisions of pathology, the methods of pathological study, the effects of environment, heredity, etc., and is well written; the subject of immunity, however, which is here included, is too shortly treated in relation to its importance. The highly important chapter on the "General Morbid Processes" is written by Professor Hektoen, and the whole subject is treated in a very succinct and able manner. We might wish that it were longer, and that some other chapters had been condensed. The four chief divisions adopted are—disturbances of the circulation, the retrogressive metamorphoses, the progressive changes, and inflammation; and throughout there is shown a thorough grasp of the subject, with due appreciation of the problems connected with it. In treating the subject of inflammation, the writer is influenced, and in our opinion rightly, by the work of Thoma; and while, on the whole, leaning to the view that inflammation is chiefly of a defensive nature, he fully appreciates the composite nature of the process whereby factors of different nature are involved. The section on tumours contains much that is excellent, and their etiology is carefully considered, due reserve being expressed with regard to the parasitic theory. To treat satisfactorily the subject of pathogenic micro-parasites within a hundred pages is a matter of the greatest difficulty; but even when due allowance is made for this fact, we find various instances of looseness or inaccuracy which might have been avoided. We may mention, as one example, the statement that Ehrlich's theory with regard to Antikörper is based on "the most popular assumption" that they are unorganised ferments or enzymes. And it seems to us that a description of an organism, if given at all, should be such as to be sufficient for its recognition; this remark applies especially to the section on bacteria. The other chapters in general pathology are on animal parasites, intoxications, the pathology of fever, and teratology. All these are of considerable merit, and that on intoxications, which deals with the effects of inorganic and organic poisons, contains much that is of interest, and much that is omitted from most text-books on pathology.

We cannot deal in detail with the part on "Special Pathology," we can only refer to certain parts. The section on the blood and blood-making organs is by Cabot, and this fact in itself would ensure that the modern methods of examination, and the results of recent work on the changes in the blood in disease, would be fully given. But there is little attempt made towards a general explanation of the laws underlying these changes, whilst recent researches on the bone-marrow and spleen in this connection are practically omitted. With the writer's view of lymphadenoma we disagree, though in this matter we would also find ourselves at variance with various other authors. The circulatory system is concisely, and on the whole satisfactorily, treated, and the myocardial changes are well described; the part dealing with the spleen is, however, deficient.

The account of the nervous system is comprehensively written, and recent work on the subject is fully referred to. The writer shows ample evidence of an extensive practical knowledge of neuro-pathology, and also sound judgment in considering debated points. There is a tendency, however, towards repetition of non-essential histological details which, after an initial explanation, could be readily and shortly expressed in the terms of general pathology. Another well-written chapter is that by Hektoen on the osseous system; and a favourable reference must also be made to that on the urinary system by Riesman. In this latter the writer gives an able and critical account of the various lesions, including the difficult subject of nephritis, and there is abundant evidence that he has devoted careful study to the whole matter. The classification of the "varieties of nephritis" is in our opinion a sound one, but the occurrence of intermediate forms is not sufficiently emphasised. Of the other chapters we can only say that they are of very diverse merit. Some are good, but others, to say the least, are indifferent, and show more evidence of compilation from literature than of personal observation; we would take several of them to be the work of comparatively young men with limited experience. In the chapters on the skin and special senses, the practitioner will find much that is interesting and useful. The work is profusely illustrated, and the figures are, almost without exception, of a high order of excellence.

From what has been stated, it will appear that we consider that the different parts of the work vary considerably in merit; and we also believe that, for the purposes of the student, more careful editing of such a composite work is necessary. Many parts are such as to demand commendation, but, in our opinion, the book as a whole cannot be taken as representative of the best work at present being done in America.

ROBERT MUIR.

The Prevention of Disease. Translated from the German. With an Introduction by H. TIMBRELL BULSTRODE, M.A., M.D. Westminster: Constable & Co. Ltd. 1902.

ON commencing the perusal of this large volume of over 1000 pages, the first fact that strikes one consists in the absence of any allusion to the actual German work from which the translation has been made; the second, that unless the signing of the preface by Dr. Wilmott Evans be held to be evidence to the point, no English editor is specified; and thirdly, the said preface mentions "those concerned in the translation," with never a translator's name vouchsafed!

The only prominent English name belongs to the writer of an Introduction nine pages in length.

The treatise itself is a series of concerted papers by different writers, dealing with "Prophylaxis, or Prevention of Disease, General and Special." A brief account of the history of the subject forms the first section, by Dr. Goldschmidt. Prof. Martins of Rostock follows upon "General Prophylaxis"; then an unsigned note on "Internal Diseases"; articles on "Prevention of Diseases of the Blood," and of "Metabolism," by Dr. Rosen; of "Infectious Diseases" and those of the "Lungs," by Dr. Richard Rosen; and so on.

The great drawback of the work lies in the excessive overlapping and repetition. Thus prophylaxis of gonorrhœa, in addition to numerous incidental references, is separately discussed under Diseases of Women, of the Urinary Organs, and again under Venereal Diseases; Neurasthenia appears both under Nervous and under Mental Diseases, etc.

It is really difficult to know what exactly to say about the book as a whole: prevention and prophylaxis of disease are construed to apply so widely, that almost all medical sciences and measures come within its purview. Thus racial, family, and personal histories, age, occupation, etiology, symptoms and signs, diagnosis, prognosis, and treatment (the last chiefly from the broader aspects), are considered to be requisite before a conscientious study of prophylaxis in connection with any class or type of disease may be said to be complete. This argument is not without reason, for every item of knowledge about how disease may be cured or alleviated, thereby preventing the development or causing the mitigation of secondary results, may logically be held to be in a sense prophylactic; and this, as much as prophylaxis antecedent to onset or spread of disease, the more commonly accepted application of the word. The wide view taken results in the work practically constituting a text-book of medicine and surgery.

One hardly expects to find in a work upon prevention of disease rules adapted for attempted arrest of *hyperemesis gravidarum*, whether controllable or uncontrollable,—here therapeutics come in, prophylaxis has missed her chance; nor the choice of a splint for a fractured bone, although possibly preventative of mal-praxis; nor can the hydropathic or health-resort treatment of chronic cardiac disease be prophylactic save by preventing the appearance of new symptoms due to advancing disease.

These notes will readily serve to indicate the scope of this ambitious, though somewhat mysterious, volume, the contents of which are by no means to be despised; for, while in no sense very original or striking, they present very fair common-sense descriptions of the subjects dealt with, and, as translated, read smoothly. A. LOCKHART GILLESPIE.

Descriptive Catalogue of the Specimens illustrating Surgical Pathology in the Museum of University College, London. New edition by RAYMOND JOHNSON, B.S., F.R.C.S., Surgeon to University College Hospital; and T. W. P. LAWRENCE, M.B., F.R.C.S., Curator of the Museum. London. 1899–1902.

THIS new edition has been necessitated by the great number of new specimens which have been added to the Museum of late years. It is divided into three parts—the first of which, devoted to the injuries and diseases of bones and joints, made its appearance in 1899; and the second, devoted to injuries and diseases of the neuro-muscular, vascular, alimentary, and respiratory systems and the thyroid gland, in 1902; while the third, which will deal with injuries and diseases of the urinary organs, the male generative organs, and the mammary gland, together with malformations, and diseases of the skin, ear, nose, and eye, has not yet appeared. The plan adopted by the editors of preceding each section by a short description of the pathological conditions, illustrated by the specimens, is a good one. It increases the usefulness of the Catalogue, and converts it into a form of text-book of the greatest practical value. In Part I., if any section is to be picked out for particular mention, it is that dealing with acute infective suppuration of bone. Another section worthy of special notice is that treating of tuberculous disease of bone, which recognises as tubercular many of the chronic inflammatory affections of both bones and joints, which had escaped recognition in the first edition of the Catalogue. In Part II. all sections are well represented, particularly those dealing with the commoner and less serious diseases, such as inflammations of bursæ, muscles, etc. The Catalogue, apart from its well balanced and well considered descriptions which introduce each section, is not a mere descriptive record of the pathological conditions shown by the specimens, for in many cases there is appended also a short account of the salient clinical features of the cases. The University College Hospital and School are to be congratulated upon the publication of this Catalogue, which cannot fail to be an immense boon to its students and active workers. R. F. C. LEITH.

Local Government Board Report and Papers on Bubonic Plague. By DR. W. BRUCE LOW. With an Introduction by the MEDICAL OFFICER OF THE LOCAL GOVERNMENT BOARD. London: His Majesty's Stationery Office. 1902.

THIS account of the progress and diffusion of plague throughout the world during the three years 1898 to June 1901, and of the measures employed in different countries for its repression, is one of the most notable books on the subject hitherto published. Extending to some 446 pages, it provides us with facts and figures of an encyclopædic character about recent outbreaks of plague in the British Isles; in Europe (Oporto, Lisbon, Cadiz, Barcelona, Trieste, Fiume, Hamburg, etc.); in Turkey and the countries adjoining the Levant, Red Sea, and the Persian Gulf; in Africa, in India, in the Far East, the Straits Settlements, China, Japan, and Islands in the Pacific; in Australia and New Zealand; lastly, in America. In the Medical Officer's report for 1898–99, Dr. Low, continuing Mr. Radcliffe's labours, had traced the later distribution of plague throughout the world up to the middle of 1898, and the present volume continues his detailed study of the disease. These reports are made to the able and energetic President of the Local Government Board, the Right Honourable Walter Hume Long, M.P., who so worthily fills that exalted office. Dr. Power, the Medical Officer of the Local Government Board, in his introductory letter to Mr. Long, gives a summary of the results so particularly obtained by his colleague, Dr. Bruce Low. In the various outbreaks special attention was given to the source of the malady, but in most cases without eliciting any certain facts. This was due to the difficulty of recognising the first case, owing to its frequent mildness, and to the tendency which plague shows in its early cases to mimic common diseases, such as enteric, malaria, influenza, and the like. With regard to the dimensions of plague prevalence, some remarkable facts appear. It shows a striking tendency to affect certain Oriental populations. In India it has proved to be exceptionally virulent, the ratio of deaths to attacks being higher than in countries outside the Asiatic continent. Moreover, in India it tends to become greatly or largely epidemic; and yet India is better prepared to resist it than many of the other countries, in which it fails to spread to anything like the same extent. It has apparently little power to acclimatise itself to conditions other than those obtaining in its own endemic area. These are considerations which have not hitherto been so prominently brought before bacteriologists, and they cannot fail to be of the greatest interest to them. The rôle of the rat in the dissemination of plague has received much attention from Dr. Low, and his results, both on shore and on board ship, throw grave doubt upon the view, which has of late been much favoured, that rats become first infected and then transmit the disease to man. Dr. Low's results show that man and the rat are reciprocally infective, but little or no proof of how far man is infected by the rat. In some localities man suffered before the rat, in others after it, and in others coincidentally with it, and the one (man or rat) might suffer for weeks or months in a locality before the disease passed over to the other. Lastly, plague may prevail in a district largely among men without conspicuously affecting rats, and *vice versâ.* In regard to treatment, it is satisfactory to find that the Government, so far as the British Isles and possessions are concerned, have been fully alive to taking every precaution, and have provided a supply of Haffkine's prophylactic for use wherever it has been, and may be, required.

R. F. C. LEITH.

Cancer and other Tumours of the Breasts. By CHARLES CREIGHTON, M.D. With 24 Lithographic Plates. London: Williams & Norgate. 1902.

THIS book is a natural extension of the author's views of the origin of mammary tumours given in a former book, entitled "Contributions to the Physiology and Pathology of the Breast and of the Lymphatic Glands" (1878). From an extensive study of mammary tumours in the bitch, he came to the conclusion that they originated not in the milk gland itself, but in the large sweat glands of the teats, which are more developed in the dog than in any other mammal, and are, moreover, present in all parts of its skin, giving rise to similar tumours in such situations, only less frequently than in the mammary region. He has continued his studies in many different fields, in order to explain and prove his theories. He has investigated the excretory skin glands in the amphibia, and in many mammals, including man, and traces the development of the human mamma from the simple or primitive sweat gland type existent in the monotremes and marsupials, and shows that there is a special risk of the former reverting to the latter, and that such reversions do not become obsolete at the climacteric period, and hence a tendency to tumour formation arises therein. He adopts the parablast theory of tissue development, and thinks, that the breast acini are probably developed from the vascular stroma derived from this parablast. He takes up in turn many examples of different tumours of the breast, describing them all with care and skill. Hydatid cysts, simple cysts, fibromas, adenomas, fibro-adenomas, steatomas, enchondromas, osteomas, sarcomas, and cancers, all receive the most careful attention, and, in regard to all of them, he comes to the same conclusion, namely, that all mammary tumours have their seat and anatomical cause in parts of the breast which have reverted to the primitive sweat gland type. The proper mammary structure, subject to the physiological laws of sexual growth, periodical involutions, and climacteric obsolescence, takes no part in these morbid growths. The parts of the breast from which they spring are certain gland tubes of anomalous development. They are either tubular glands, similar to the large sweat glands of the axilla or areola, or coiled tubular glands of a similar character, but deficient of the plain muscular fibres in the basement membrane, though possessing them in the connective tissue between the windings of the tubes; or, thirdly, from a rudimentary mammary lobule consisting of a branched tube without real acini. These anomalies occur in so many breasts, that they cannot be regarded as accidental. They are to be explained as imperfect evolutions or reversions. They may exist without causing tumours, if an exciting cause be absent. Blows, repeated pressures, or other injuries, or milk abscesses, or regular climacteric effacement of structure, or repeated congestions, in sympathy with ovarian excitement, may all act as exciting causes. The result is activity of growth in the gland cells lining the tubes themselves, and in the vascular tissue around them, *i.e.*, the morbid effects are both intratubular and extratubular. The latter are, in the author's opinion, the more active in all cases, and the particular development taken determines whether a simple fibromatous or a malignant cancerous growth will result. For the evidence and arguments in favour of these contentions, the reader must be referred to the book itself. It is enough to say here that, whether he is able to agree with the author or not, he will enjoy his clear, forcible, and admirable writing. The book is well illustrated, and every one interested in mammary tumours should read it. R. F. C. LEITH.

A Manual of Practical Medical Electricity. The Röntgen Rays and Finsen Light. By DAWSON TURNER, M.D., F.R.C.P.Ed. Third Edition. London: Baillière & Co.

THIS being the third edition of the above-named book, but few words are needed to explain its nature and scope; suffice it to say that the author again presents the subject of medical electricity in as concise and practical a form as possible.

In preparing this edition, Dr. Dawson Turner has re-written a large part of it, and has endeavoured, by the addition of new material and by the revision of the earlier text, to keep the book abreast of the times. It is well and clearly written, plentifully illustrated, and the various uses that electricity can be put to for medical and surgical purposes are presented in as interesting and instructive a manner as is possible, for what is of necessity still a very technical and special study.

In view of the rapid advances recently made in radio-therapy, we note with satisfaction those chapters dealing with the X-rays and the Finsen light, which enhance the value of the book. The necessary apparatus, its essential parts, the method of detecting and localising foreign bodies, the therapeutic and photographic uses of the X-rays, and the mode of employment of the ultra-violet rays, are fully described, together with a record of cases treated in the Electrical Department of the Edinburgh Royal Infirmary.

We can highly commend this book to students and practitioners, and we offer our congratulations to the author on his excellent contribution to a subject which has awakened a strong hope in the minds of medical men, and which we believe has a great future before it.

JOHN W. L. SPENCE.

Bacteriological Technique. By J. W. H. EYRE, M.D., M.S., F.R.S. Philadelphia and London: W. B. Saunders & Co.

DR. EYRE merely claims for this book that it supplements the usual scanty details of technique given in the well-known text-books of bacteriology. But to satisfactorily learn technique, one must go to the teacher and not to the text-book. For this reason, among others, we fail to see a place for Dr. Eyre's book.

The arrangement of the matter is unsatisfactory from the student's standpoint, for surely he should be familiar with incubators and nutrient media before he goes into elaborate details of classification, microscopic examination, and staining methods. Throughout there appears to us to be a great deal of unnecessary and useless detail, and the student is treated as a mechanical figure rather than as a man of common sense.

A considerable space is devoted to illustrations, and though we hesitate to criticise adversely here, yet we confess that we see no object in such illustrations as Figs. 16A, 50, 51, 90 and others, while Fig. 67 is out of proportion, and a more confusing and misleading illustration it would be hard to conceive.

In a book professing to go into minute details and to give reliable information, we are astonished to find, under the differential stain for tubercle bacillus, such a statement as "Decolorise by dipping in sulphuric acid—25 per cent." without any limit as to time; and similarly in the modified Gram-Weigert method, "Treat with aniline oil," "treat again with aniline oil," whether for one minute or for one hour we are not told. There is much in the book of considerable value, especially in regard to standardising of media, methods of isolation and identification, but these are so mixed up with unimportant and trivial details, that the book is hopeless as a laboratory guide to students or even as a book of reference. J. M. Beattie.

The Blood: how to Examine and Diagnose its Diseases. By Alfred C. Coles, M.D. Second Edition. London: J. & A. Churchill.

Diagnosis by means of the Blood. By Robert Lincoln Watkins, M.D. London: Sampson Low, Marston & Co. Ltd.

The former edition of Dr. Coles' work on the blood was one of the best of the smaller monographs on this important subject. In the new edition there is ample evidence that the work has been thoroughly revised. Much new matter is also introduced, in the sections dealing with malaria, filariasis, eosinophilia, and the staining of films for example. The general methods of examination, the morphology of the cellular elements, and the blood in disease, are dealt with in a manner at once concise and clear, and the work undoubtedly forms an admirable monograph. It is not an exhaustive treatise, however, for there is no mention made of Haldane's method of estimating hæmoglobin, chloroma, the serum reactions in paratyphoid and Malta fevers; or the methods for determining the specific gravity and alkalinity of the blood, or for the detection of bacteria in the blood.

Dr. Watkins' book is a remarkable one. The author uses no stains, but examines "live blood fresh, as soon as it is drawn, in order to note the changes that take place." He regards the chromatin filaments in the nucleus of a leucoblast as fibrin filaments, and the nuclear membrane as equivalent to the cell wall of the red corpuscles. "Granular matter" in the blood he terms "tuberculous matter." Microcytes are especially noticeable "in functional nervous disorders, in which the patient is fidgety." "Rheumatism . . . is characterised by a thickened adhesive condition of the red blood cells." Fibrin "is a fine, invisible network which circulates in the blood continually wherever it goes." The fibrin skein in one case "stopped in the brain of a man in the night, and he never woke to know what killed him." And yet the author is presumably an American. But perhaps the gem of the work is the diagnosis made in one case in which the fibrin "is broken in spots, thus showing that, if not his constitution, something is shattered." The author displays a pitiable ignorance of even elementary facts, his knowledge is crude in the extreme, and he will be disappointed, "for he desires the book to sell only on its merits." W. T. Ritchie.

RECENT ADVANCES IN MEDICAL SCIENCE.

MEDICINE.

UNDER THE CHARGE OF

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ASTHMA.

SIHLE of Odessa (*Wien. klin. Wchnschr.*, January 22, 1903) contributes an exhaustive paper upon asthma. He first asks, "What is asthma? What functions of the organism are altered in asthma?" Passing over the older theories, of the more recent may be mentioned Jürgensen's definition—"Paroxysmal attacks of difficulty in breathing, during the expiratory effort especially, the number of respirations more often lessened than increased; whistling and stertor; small râles audible; pulmonary paralysis following in its course." Brügelmann regards it briefly as a dyspnœa caused by bronchial contracture, and attributes all the symptoms of the attacks to this source. Brissaud—contracture, dyspnœa, vasomotor disturbance. Goluboff—"the underlying cause of asthmatic attacks is to be found in spasm of the bronchial muscles, associated with a specific—the so-called asthmatic—neurotic catarrh." Hoffmann regards asthma as a neurosis of the respiratory nerves, associated with dyspnœa and distension of the lungs; while Fränkel opines the *causa causans* to be a reflex neurosis arising from three conditions—local catarrh, hyperæmia of the mucous membrane, and cramp of the bronchial muscles.

The authorities are, at present, unanimous in ascribing the chief rôle in asthma to bronchial contracture; while some of them regard the so-called asthmatic catarrh, with increase of bronchial secretion, as *sui generis* and apart from the cramp, and others consider the defluxion a sequel.

Sihle himself has for seven years almost daily seen fresh cases of asthma, many of which he has been able to study for months or years. He insists on the importance of not only studying asthmatic cases during the paroxysms, but also of paying close and repeated attention to the condition between the attacks.

The respiratory dyspnœa of a paroxysm is associated with dry, whistling râles, acute pulmonary distension, with lowered diaphragmatic level, hindered cardiac action, almost impalpable pulse, and descent of the liver, which, in the majority of cases, is tender on pressure; while, between the attacks, the dyspnœic and the cardiac obstructive symptoms are absent; the dry râles gradually acquire a moist character, and later disappear; the enlargement of the liver, however, seldom entirely resolves, nor does the hepatic tenderness disappear altogether.

The abnormally low level of the liver, and the increased sensitiveness of that organ to pressure during the free intervals, have not received adequate consideration, although they are facts of no little importance. The common methods employed to determine the size of the liver—palpation, percussion, auscultation—are insufficient here. Percussional "Transsonanz," after Henschen and Buch, gives more accurate results.

The lower edge of the liver is found to extend below the costal margin in hyperæmia, hypertrophy, hepatoptosis, and descent of the diaphragm. The relative position of the upper border of the liver is not so readily ascertained, even by percussional transsonance. As Sihle observed, however, that this hepatic projection below the costal margin was almost invariably associated with increased tenderness on pressure and to percussion, he paid special attention to the subject, regarding it as a sign of chronic congestion. To this end he examined the blood pressure of each asthmatic patient under his care, during the last three years, with Gärtner's tonometer.

He found that the blood pressure in asthmatics is not only below that of non-asthmatic and healthy persons, but that it tends to vary much more widely from time to time. The normal limits in men may be taken to be from 90 to 120 mm.; in women, 80 to 100 mm.; in asthmatic, 80 to 90 mm. formed the usual maximal value, 60 to 70 mm. the minimal; while in one patient, at five-minute intervals, values of 90, 70, 100, 85, and 75 mm. were obtained consecutively.

It was not only in those chronic cases, with attacks each week or month, that this weakness of blood pressure could be substantiated, but also in patients subject to paroxysms once only in twelve months, or even less frequently. Now, while a few asthmatics undoubtedly suffer from weakened cardiac musculature, the majority may be said to possess a tendency towards enfeeblement of circulatory muscular mechanism through vasomotor influences.

During an asthmatic paroxysm, although the musculature of the bronchial tubes is spasmodically and strongly contracted, no rise of blood pressure in the general vessels occurs, even although the pressure is already abnormally low; that is to say, that while the intrinsic respiratory muscles are stimulated, the vascular muscular system is inhibited.

Much follows of great interest, discussing the question from its physiological and neuro-pathological side, illustrating it by *à propos* clinical records, better to be consulted in the original than from a *prècis* here. Its outcome—asthma, and the predisposition thereto—depend upon four causal factors. Tendency to (1) bronchial spasm (increased tone of the bronchial muscles); (2) vasomotor insufficiency (decreased tone of the vascular musculature); (3) congestive hyperæmia of the respiratory mucous membrane; and (4) an abnormal specific secretion from the same.

These four factors may be influenced by the peripheral nervous system, the constituents of the blood, or the cerebrum, especially the cortex; thus asthma may be peripherigenic, hæmatogenic, or psychogenic and cerebral.

As is only rational, treatment should not be restricted to the actual periods of the attacks, but continued in the intervals, and be devised, in each case, to combat the one, or the several, causal factors present. Digitalis, heroin, and iodide of potash has given good results in Sihle's experience. Suggestion sometimes benefits asthma of purely functional origin.

The part played by nasal and posterior-nasal disorders in the causation or the aggravation of asthma he holds to be commonly exaggerated.

The Body Weight day by day as a Diagnostic Aid, especially in Cardiac Disease.

Iacobaus (*Ztschr. f. Diatet. u. Physik. Therap.*, Leipzig, October 1902) writes upon the significance attachable to the daily variations in weight, particularly as shown by patients suffering from heart disease. He gives first two graphic charts showing the daily variations in a healthy adult male and a healthy child. The difference between the maximal and minimal weights during two weeks (the weighing being strictly uniform as to time and nakedness) in both instances amounted to 600 grms. (1·33 lb.). When a woman æt. 56 first came into hospital suffering from heart disease and recurrent rheumatic fever, she scaled 73·5 kilos, rising 0·2 kilo by the fourth day, before the treatment, commenced on the third day, began to exert an influence. Twelve days after she only weighed 65·125 kilos, a loss of 8·575 kilos (1·35 stone). [Dr. Iacobäus gives his daily weighing away in the graphic curve for this case; from the fourth to the fifteenth day, only one separate entry is shown interrupting a straight line.] The reduction in weight represents the disappearance of œdemic and ascitic fluids. In another heart case in which the body weight had fallen under medicinal treatment, stoppage of the same was followed by a very rapid increase; 7·5 kilos in ten days (more than 1 stone, 2 lb.). A similar case lost about the same amount (7·6 kilos) in nine days under strophanthus and digitalis; but, medicinal treatment being stopped, gained in a little over two weeks as much as he had lost, or rather more.

The influence exerted by the state of the bowel upon the body weight is very strikingly shown in the curve of daily weight relating to a female, who was in the habit of taking a strong saline purge every third day to obtain movement of the bowel. Every third day she lost a kilogram or more in weight, regaining what she had lost during the interval.

Whenever and wherever possible, a daily record of patients' weight should be kept, and will often prove of great assistance to the physician in judging as to the results of his treatment, and of the progress of his case.

SURGERY.

UNDER THE CHARGE OF

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A CASE OF PASSAGE OF A FOREIGN BODY FROM THE ŒSOPHAGUS INTO THE THYROID GLAND.

THE following rare and interesting case is recorded by Levy. A medical man, æt. 60, while swallowing some chicken, suddenly felt a pain in his throat. He was able to swallow immediately afterwards, but the act caused pain. In the hope of dislodging the foreign body, he immediately swallowed a good deal of bread and fluid. About one and a half hours later the larynx was examined with the mirror, and nothing abnormal seen in the larynx or surrounding parts. Digital examination caused slight pain in the region of the larynx. Three days later the temperature rose. A small but distinct swelling also appeared on the right side of the neck, just below and to the right of the cricoid cartilage. Operation was undertaken on the evening of the same day. An incision was made from the hyoid bone downwards, along the anterior border of the sterno-mastoid, and the omohyoid was divided. Some œdema of the tissues over the right lobe of the thyroid gland was noticed. The capsule of the gland appeared thickened and of a light grey colour. No foreign body could be felt even after introducing a bougie into the œsophagus. In order to get at the œsophagus, the right lobe of the thyroid was turned aside, and in so doing a small tear was made in the gland, from which a few drops of pus exuded, and in which, on further examination, the point of a piece of bone was felt. The bone was removed, and found to have been lying in an abscess cavity in the thyroid gland, of tubular shape, with its inner end lying against the œsophagus. A sound could not be passed into the lumen of the œsophagus from the abscess. The foreign body was a piece of chicken bone, 2½ cms. long, with a sharp and a blunt end. From its position it appeared that the blunter end must have penetrated the œsophageal wall into the thyroid gland, probably driven through by the patient's efforts to dislodge it by repeatedly swallowing bread when the bone stuck. The patient made an uneventful recovery. Levy has only been able to collect four other similar cases from the literature. Early operative interference in such cases is demanded, he thinks, by the serious results which may follow if a case is allowed to go on till a diffuse suppuration in the neck is set up.—*Med. Cor.-Bl. d. Württemb. ärztl.*, Stuttgart, No. 48, November 1902.

MOBILISATION OF THE DUODENUM AND GASTRODUODENOSTOMY.

KOCHER (*Centralbl. f. Chir.*, Leipzig, No. 2, 1903) has recently practised a new method of uniting the stomach and duodenum, which he intends in future to carry out in all cases of pyloric stenosis, except those which present unusual difficulties due to adhesions, etc. He claims that if the stomach can be united to the duodenum at the height of, or above, the opening of the bile duct, all danger of accumulation of bile and pancreatic juice in the intestine, and of their backward flow into the stomach, is avoided, and the risk of the development of a peptic ulcer is done away with, because the stomach contents are neutralised immediately on their entry into the intestine. In discussing the anatomy of the operation, he points out that it is relatively easy to make the duodenal loop as movable in the adult as it is at an early stage of development, when it hangs free in the abdomen. In order to effect this, it is necessary to divide the posterior parietal peritoneum vertically, two fingers-breadth to the right of the descending part of the duodenum. This line of division lies in front of the right kidney, and to the left of the descending loop of the hepatic flexure. The peritoneum should be incised and not torn through, in order to avoid possible injury to the peritoneal covering of the front of the duodenum. If the edge of the incision next the duodenum is then lifted up with two fingers, it will be found easy to insinuate the other fingers behind the duodenum and to strip it from the vertebral column, the vena cava, and the aorta. To raise the inferior duodenal flexure freely enough, the peritoneal incision must be carried as far down towards the colon as possible. The head of the pancreas is raised with the duodenum. By this manœuvre the muscular coat of the back of the duodenum is not exposed, as might be expected, for it retains a connective tissue covering, the remnant of its former serous investment. The extent of the separation of the duodenum is limited by the arrangement of the neighbouring vessels. On its concave side the right gastro-epiploic artery sends branches to the colon over the inferior part of the duodenum, and, when the colon is turned up, the right colic branch of the superior mesenteric is seen to pass over the inferior and lateral borders of the duodenum. These relations, however, do not prevent the duodenum being freed far enough to allow it to be grasped and held by two fingers above and below the place where the stitches are to be inserted. Nothing is wounded by the whole procedure, except the peritoneum and the delicate connective tissue in front of the vena cava and the aorta.

Kocher gives the following directions for the performance of the operation:—The skin incision should be a free one, beginning in the middle line and running obliquely down and to the right, parallel to, and two fingers-breadth below, the costal margin. The rectus muscle, with its sheath and the peritoneum, are obliquely divided as far out as the broad abdominal muscles. In muscular patients the transversalis may also be divided parallel to the direction of its fibres, which must then be strongly retracted. Adhesions between the gall bladder and colon are often present, and must be divided. The liver is then pulled up, the stomach to the left, the descending limb of the hepatic flexure and the transverse colon downwards, and the edge of the duodenum clearly defined. The peritoneum over the right kidney is next incised 3 to 4 cms. from the duodenum, in a vertical direction, and the incision is continued down the stretched upper layer of the mesocolon, as far as the large branches of the vessels. The left edge of the peritoneal cut is stretched by the fingers, lifted up, and the duodenum separated from the vertebral column, vena cava, and aorta, till it can be raised or the finger passed behind it and pressed against the pyloric end of the stomach.

Both organs are then grasped and occluded by fingers above and below the line of suture, and a lateral anastomosis is made in the usual way by suturing.

Kocher has done the operation five times, four times for stenosis due to scar formation, once in a case of malignant stenosis. Backward flow of bile has either not occurred at all, or only for a short time after the operation when a very wide opening had been made. He thinks it advisable to make the opening in the duodenum as high as possible and not very large.

THE TELEPHONIC PROPERTIES OF THE INFLAMED ABDOMEN.

PETERS of Toronto (*Canad. Journ. Med. and Surg.*, Toronto, December 1902) draws attention to the distinctness with which the heart and breath sounds may be heard over the tense distended abdomen in peritonitis, after the usual gurgling sounds due to the passage of gas and liquid fæces from one loop of the bowel to another by peristaltic action have ceased. The heart sounds are invariably to be heard over the whole abdomen, and both inspiratory and expiratory breath sounds are also audible, and especially well in children. These sounds are not audible in distension due to causes other than paralysis of the muscular coat of the intestine, as a result of peritonitis, *e.g.*, flatulence due to indigestion, chronic obstruction, collections of ascitic fluid, or fluid associated with tuberculous peritonitis. He believes that this phenomenon is a valuable diagnostic sign of paralysis of the muscular coat of the intestine. It is to be explained by the fact that, when the bowel is paralysed and its tone is lost, the gas which collects in the coils of intestine cause them to distend, and by mutual compression the different air-containing compartments come to form a continuous body of gas of uniform tension, which transmits sounds readily. Its capability of transmitting sound is doubtless enormously amplified by the dense board-like condition of the muscles of the abdominal wall. In the opinion of the author, the distinctness with which the heart and breath sounds are heard over the abdomen bears a direct relation to the degree of paralysis present; and if the paralysis be due to sepsis, as is usually the case, the prominence of the symptom has high prognostic significance.

OBJECTIONS TO COCAINISATION OF THE SPINAL CORD.

COCAINISATION of the spinal cord has been carried out on sixty-two occasions in the clinique of von Mikulicz. In forty cases the analgesia was complete, in nine it was incomplete, and in twelve there was none at all. The injections were frequently followed immediately by such unpleasant symptoms as sickness, vomiting, profuse sweating, a feeling of general oppression, and tremors all over the body. Twice there was genuine collapse. Among the untoward after-effects were continuous vomiting, pains in the loins and back, and severe headache. On several occasions there was retention of urine. The unreliability of the method and the occurrence of these unpleasant symptoms have led to the abandonment of the injection of cocaine into the spinal canal at von Mikulicz' clinique.—*Beitr. z. klin. Chir.*, Tübingen, Bd. xxxv. Heft 2.

OBSTETRICS AND GYNÆCOLOGY.

UNDER THE CHARGE OF

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Therapeutic Interruption of Pregnancy.

This subject is discussed by Pinard (*Ann. de gynéc.*, Paris, November, 1902). He considers that gestation should be artificially terminated in all cases in which a disease caused by or aggravated by pregnancy threatens the life of the mother. He classifies those as—(1) Caused by pregnancy: uterine hæmorrhage, hydramnios, hydatid mole, toxæmias; (2) aggravated by pregnancy: disease of the circulatory, renal, or respiratory systems. In cases of uterine hæmorrhage it is absolutely indicated when the pulse rate is persistently above 100 beats per minute. In cases of hydramnios he considers that it is indicated when there is generalised œdema together with dyspnœa, and also in all cases of the so-called "acute febrile hydramnios." In myxoma of the chorion it should always be performed, on account of the danger of hæmorrhage or of subsequent malignant disease. It is indicated in albuminuria when medical treatment fails to diminish the albumin, and cerebral and visual symptoms persist. In severe cases of cardiac disease the indication is a combination of asystole with dyspnœa. In complicating nephritis there is no definite rule to follow; Pinard induces abortion if the excretion of urine falls below 1000 c.c. in twenty-four hours. Following the above indications, Pinard interrupted pregnancy but twenty times, with fourteen successes, in 22,700 cases.

The Treatment of Placenta Prævia based on a Study of Thirty Cases.

De Lee (*Am. Gynæc.*, August 1902) discusses the treatment of thirty cases of placenta prævia which he has had in his own practice. The conditions present in each case modified the treatment. Of the thirty mothers but one died, and this death was due to sepsis. Of the thirty-one children fifteen died, but of these nine were either not viable or were dead before the case presented itself for treatment. If labour has commenced, the state of the cervix and the amount of hæmorrhage will indicate the course which should be followed; if it has not begun, the membranes should be punctured and a hydrostatic bag introduced so as to rest on the placenta and press it against the cervix, traction being made on the tube. When hæmorrhage is slight, the pains regular and strong, and the cervix dilating satisfactorily, the case may be watched, and the membranes ruptured if the bleeding becomes more profuse. The presenting part as it advances will usually check the hæmorrhage; if not, and if the cervix is completely dilated, forceps should be applied if the head is engaged. If the cervix is not fully dilated, Braxton Hicks' version, or metreurysis, may be employed to effect full dilation. For metreurysis De Lee employs Braun's colpeurynter and keeps up traction till the bag is expelled. If now he finds that the cervix is fully dilated, and that the head has followed and engaged in the pelvis, the case may be left to nature. If the cervix is not fully dilated, version may be performed, or the bag may be replaced and filled with a larger quantity of water. Too rapid and too early delivery are to be avoided. Great hæmorrhage and collapse do not indicate rapid delivery; the sudden emptying of the uterus may increase the amount of shock and kill the woman. In such cases the best way of dealing with the hæmorrhage is by turning and tamponing the lower uterine segment with the breech.

CERVICO-VAGINAL FISTULÆ.

NEUGEBAUER (*Centralbl. f. Gynäk.*, Leipzig, No. 31) finds that of 420 cases of vesical fistulæ collected by him, 5 per cent. were combined with a cervico-vaginal opening, the posterior cervical wall being more frequently affected than the anterior. The majority of such cases are due to a torn cervix, ununited at its upper part. A second series belong to cases where the fistulous opening remains patent after an incompletely united wound following Emmet's operation. Rare causes are specific ulceration or puerperal necrosis; and, lastly, perforation of the cervical wall as the result of traumatism (instrumental). The condition is interesting, as cases have been reported where conception and abortion have occurred through such an opening. Jaquet reports the following case. Patient, æt. 22, had a seven months' miscarriage. The cervix was virginal, and 2 cms. higher up in the posterior cervical wall, and at the edge of the vaginal vault, there was found an opening 2 to 3 cms. long, from which blood exuded. The cervical opening was smooth, the edges of the fistula ragged in outline, and bled easily on manipulation. Neugebauer reports the case of a patient, æt. 27, who miscarried at the fifth month. The os would barely admit the sound, but a defect admitting the finger was found on the posterior cervical wall. He discusses the probable cause of such an opening. In the *Arch. f. Gynäk.*, Nordmann reports the case of a woman, æt. 32, who had a seven-months child, supposed to have passed through an opening in the posterior cervical wall, as the os admitted the sound with difficulty. Wormser (*Centralbl. f. Gynäk.*, Leipzig, 1902, No. 48) describes the case of a woman, æt. 26, who had what appeared to be a normal confinement. Some time later on, passing the speculum, it was noted that the os was round in outline, with no trace of laceration. An opening, 2½ cms. long, was found higher up in the posterior cervical wall. The interest in the case lies in the patient having had pains for three days without any perceptible effect on the os. The abortion was expelled after one strong pain; Wormser believes that the effect of the pains for three days was to so stretch the posterior cervical wall, that this gave way with the strong pain which expelled the contents of the uterus. Williamson has reported a case where a similar condition was found affecting the anterior cervical wall, through which a foot and leg protruded. These were pushed back, the cervix dilated, and delivery affected normally. In addition to the above-mentioned causes, Neugebauer gives congenital abnormalities (double os) and spontaneous tear of the posterior cervical wall *sub partu*. In all, ten cases similar to the above have been reported.

VAGINAL CÆSAREAN SECTION IN PREGNANCY COMPLICATED WITH CERVICAL CARCINOMA.

WEBER (*Centralbl. f. Gynäk*, Leipzig, 1902, No. 48) reports the following case:—Patient æt. 39, multipara, pregnant at the ninth month; had carcinoma involving the posterior cervical lip and vaginal wall—parametrium free, pelvis normal. The first part of the operation was similar to the first stage of ordinary vaginal hysterectomy. The anterior uterine wall was then split to the extent of 6 cms. above the internal os, the child turned and easily extracted. The uterus was then divided up through the fundus, both broad ligaments ligatured, and the uterus removed. The operation was completed in forty minutes. Weber has collected thirteen cases of this operation (excluding those where the pregnancy had not advanced beyond the sixth month); of those, two died from cardiac failure. Of five premature cases all the children died, the remaining nine full-time ones lived. The advantage of Dührssen's operation over other methods lies in the peritoneum being opened only in its lower part; great exposure of intestine is thus prevented, and the occurrence of shock greatly diminished; further, the diseased tissues being first thoroughly removed, peritoneal infection is prevented. In contracted pelvis and rigid soft parts, the operation is contra-indicated as it is necessary to extract the child as rapidly as possible. The size of the child, however, offers no great contra-indication. The vaginal extirpation is greatly facilitated by the softness and dilatability of the parts associated with pregnancy. Hæmorrhage (venous) is the chief obstacle met with during the operation, and Weber relies on gauze pressure as a temporary means of control till the broad ligaments are secured. Kallmorgen reports a case at the eighth month, both cervical lips being affected. The steps of the operation were similar to the above reported one, twins being easily extracted. He concludes that in cases of operable cancer, the following are the alternatives:—(1) Dilatation of the cervix with Bossi's dilator—extraction of the fœtus followed by total extirpation; (2) classical Cæsarean section followed by abdominal hysterectomy; (3) classical Cæsarean section followed by vaginal hysterectomy; (4) vaginal Cæsarean section followed by vaginal hysterectomy.

The last he regards as the best method, on account of the rapidity of the operation and slight hæmorrhage associated with it. It is important to ligature the uterine artery *after* extraction of the child.

PREGNANCY AND LABOUR FOLLOWING NEPHRO-URETERECTOMY.

BOVÉE (*Am. Gynæc.*, vol. i. No. 5) remarks on the rarity of recorded cases of pregnancy and labour following upon nephrectomy. He refers to Steinheil's case, where the left kidney had been removed for tuberculous disease, at the second month of pregnancy, associated with pus and blood in the urine. Those urinary symptoms improved, and the patient was delivered at full time of a healthy child. She died two years later from recurrent tuberculous disease.

Schramm reports the case of a woman, æt. 25, who had the right kidney removed for hydronephrosis. Five weeks later she was discharged from hospital with a slight amount of pus in the urine. The left kidney was normal. She became pregnant four years later, and had a normal confinement, the urine being now free of pus. He refers to Fritsch's case, where nephrectomy for ureteral fistula had been performed on a patient who afterwards became pregnant and had a normal confinement, with subsequent good health.

Bovée's own case was one of complete nephro-ureterectomy for pyonephrosis, renal calculi, and miliary abscess in the ureter. She was confined a year later, labour being normal, the child weighing 10½ lb. The third day after delivery she complained of great abdominal pain, referred chiefly to the course of the left ureter, associated with rise of temperature. Six months later the urine contained a considerable amount of albumin.

The question of chief importance in those cases is the permanent effect of pregnancy and labour upon the remaining kidney. In Bovée's opinion, they seriously affect the life of the patient, because renal complications become greatly increased, necessitating the induction of premature labour.

THERAPEUTICS.

UNDER THE CHARGE OF

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A CASE OF THALLIUM POISONING.

Bullard reports a case of poisoning from this metal. The remedy was at one time advocated for the night sweats of phthisis, but its use was discontinued, owing to the fact that it led to alopecia. Animal experiments show that, in addition, thallium acts on the muscular system, causing tremor and general muscular wasting. Bullard's case was that of a physician who took sulphate of thallium for experimental purposes. Probably in all about 4 grs. was taken, certainly not more than 8. Half to 1 gr. was taken every other night for three or four doses, and then the drug was stopped for two months, when a further course of three or four doses were taken. After the first lot nothing was noted, but within two or three days of the second lot numbness in the fingers and toes was noticed. The numbness rapidly spread, and there was weakness of the lower extremities and partial paralysis. There was transient diarrhœa. Muscular wasting was marked, and the nerves were painful. Plantar reflex and ankle clonus were absent, but the knee jerks were active. Under ordinary treatment the neuritis gradually improved. Subsequent to leaving hospital there was total loss of hair. During the stay in hospital traces of arsenic and lead were found in the urine, but Bullard thinks that the neuritis was not due to these drugs. —*Boston Med. and Surg. Journ.*, Nov. 27, 1902.

EXERCISE IN PHTHISIS.

IN this paper Penzoldt discusses the question of the amount of exercise which should be permitted to phthisical patients. In many cases the patient is simply told to be as much as possible out in the open air, and take plenty of exercise. Penzoldt thinks that in doubtful cases more harm is done with too much exercise than with resting in bed. It has been urged against bed treatment, that it leads to shallow breathing, which is injurious to the organism in general and the diseased lung and the surrounding tissue in particular, owing to the diminished interchange of air and the interference with the circulation. The shortness of breath complained of in early cases of phthisis is not due to the mechanical interference due to involvement of the lung tissue, but to the over-excited condition of the respiratory centres. Since Penzoldt has treated his febrile cases by simple rest in bed with open windows, and large amount of milk, he has obtained much better results than formerly when he did not lay much stress on rest in bed. Another objection urged against the treatment in bed is that the appetite suffers, and the bowels are confined. As a rule, Penzoldt finds that patients eat better in bed than when they are subject to febrile attacks after exercise. Of more importance is the bad effect mentally on the patient, produced by constant confinement to bed, but even this does not seriously interfere with the good results of the treatment. It has been urged that the rest in bed unfits patients for taking up their work again when they go out, but Penzoldt points out that about one-third of the tuberculous patients are engaged in sedentary occupations, and that even those who do hard manual labour should rest in bed, as the cicatrisation of the lung is more likely to take place if the lung is kept as much at rest as possible. He thinks that it should be made a rule that whenever a patient's rectal temperature reaches 100°·4, he should be kept in bed. The bed can be kept in the balcony or beside an open window. The rest in bed should be complete, like that of a typhoid case, and the patient should not be allowed up to wash or eat, etc. After every acute exacerbation of the disease (prolonged fever, hæmoptysis, pleurisy, or extension of the local signs, etc.) for two months all unnecessary movement should be avoided. Under this category comes going up and down stairs, billiards, games, and walks, except very slow strolling. In particular, the fatigue connected with removing a patient to a sanatorium should be curtailed as much as possible. The best control for exercise is the rectal temperature, which Penzoldt prefers to the axillary or oral temperature. Penzoldt has shown that exercise raised the temperature of phthisical cases more than that of healthy people. In patients without fever, immediately after a walk, the rectal temperature should be taken. A temperature of 100° or 100°·2 is suspicious, while 100°·4 shows the exercise in question was too severe.

It is a good rule that phthisical patients, who, when resting, have a rectal temperature of 99°·5 and upwards, should avoid all unnecessary movement, and an exception should only be made with distinct improvement in the general condition and local symptoms, and even then only if no rise of temperature follows cautiously regulated exercise. —*München. med. Wchnschr.*, 1903, No. 1.

AN ANTITOXINE FOR MORPHIA.

HIRSCHLAFF claims to have obtained an antitoxic serum for morphia, although Ehrlich and his followers have denied the possibility of producing an antitoxine for inorganic poisons, alkaloids, and glucosides. Faust has already shown that the fate of morphia in acute and chronic poisoning is different. Whereas in acute poisoning $\frac{3}{8}$ of the drug is excreted unchanged in the fæces, in chronic poisoning, with daily doses of $\frac{3}{8}$ gr., only traces can be recovered from the fæces. The relative immunity obtained by prolonged use seems, therefore, to depend less on increased tolerance than on the development of new factors which alter the morphia in the tissues. For the production of an antitoxine Hirschlaff used rabbits and mice. Starting with an initial dose of 0·015 gr. or 0·03 gr., the dose was rapidly raised till from 0·51 gr. to 1·20 gr. were given daily to rabbits. The period covered by the injections varied from three weeks to five months, so that the total morphia injected varied from 4·59 grs. to 63·61 grs. for individual animals. As a rule, the general health did not suffer. The serum was prepared in two forms. Either the morphia was stopped for a month before the rabbit was bled, or only one day's freedom from morphia was allowed. In rabbits the stopping of the drug does not cause much trouble. To test the efficacy of the serum Hirschlaff first used rabbits, but, owing to the difficulty in fixing a certain minimum lethal dose, the experiments were unsatisfactory. Still he claims to have shown that the serum confers a certain immunity against acute morphia poisoning. The serum which proved best was that of rabbits which had been receiving a daily dose of 0·72 gr. per diem. Larger amounts did not increase the efficiency of the serum. No difference could be discovered between the two kinds of serum. A further test of the serum on mice proved more satisfactory, as mice react in a much more uniform fashion to morphia, and there is no difficulty in establishing the lethal dose. A certain lethal dose for a mouse is 0·01 gr. of morphia. Normal rabbit serum, injected twenty-four hours beforehand, proved to have no protective action. If 1 c.c. of the prepared serum was injected twenty-four hours beforehand, the mice did not succumb to 0·01 gr. of morphia. The protection was such that double this ordinary lethal dose could be recovered from. Again, no difference was noticed between the two kinds of serum. Having thus, as he thinks, conclusively proved the possibility of an antitoxine for morphia, Hirschlaff suggests, as a possible explanation, that the nerve cells and their lecithin molecules may be able to form a chemical combination with morphia. To support this theoretical binding of the morphia to the specific receptive cells, he performed a few experiments, which show that if morphia is rubbed up with a solution of fresh mouse-brain, and the fluid then centrifuged, it will be found that the toxicity is diminished; whereas if the brain solution is previously boiled, the morphia combination is destroyed, and the toxicity remains unchanged. Hirschlaff has tested his serum in one acute case of laudanum poisoning. He took an amount representing 1 gr. of morphia. The treatment consisted in immediate injection of 10 c.c. of the serum. An hour and three-quarters afterwards the stomach was washed out, but contained no morphia, showing that absorption had been complete. In addition, camphor was twice injected, and $\frac{1}{130}$ gr. atropine was given. In this case of severe poisoning the effect of the serum was undoubted. Hirschlaff next investigated whether the serum had any effect in diminishing the severity of the symptoms caused by cutting off morphia. His experiments in this direction cannot be considered conclusive, notwithstanding the theory which he suggests to explain the supposed action of his serum.—*Berl. klin. Wchnschr.*, December 8 and 15, 1902.

AORTIC ANEURYSM TREATED BY ELECTROLYSIS.

HARE reports another case of aneurysm treated by this method. In all he has performed the operation eight times. In the case in question, electrolysis was twice performed. The aneurysm developed after an accident injuring the chest. Twelve months after the injury, a pulsating expansile tumour developed in the anterior median line. A loud murmur was heard over it. The skin was surgically cleansed, a small skin incision made, and a small hollow needle inserted, through which 9 ft. of gold wire was passed. The current was turned on, at first 5 milliampères, which, in the course of thirty-five minutes, was gradually raised to 55 milliampères, and then gradually reduced to nil in fifteen minutes. The needle was then withdrawn, the wire severed, and the wound sealed with comp. tinct. of benzoin. The bleeding from the needle ceased after the current had acted for two and a half minutes; while the effect of five minutes of the current was shown in the diminished pulsation and increased firmness of the tumour. As the clot formed, the patient felt less oppression and breathed more easily. He left the hospital in a few weeks much improved, returned home, married, and remained in good health for two and a half months, when suddenly the swelling increased rapidly at one side, though the part wired remained firm and solid and devoid of expansile pulsation. The new swelling was wired, but the skin did not heal properly, and oozing persisted, and a slight slough formed. From now to his death repeated copious hæmorrhages occurred; after each bleeding the tumour diminished in size. Eventually the external wound reached the size of a quarter-dollar, and a profuse hæmorrhage proved fatal. Hare considers that electrolysis in properly selected cases is a valuable measure, and prolongs life. The operation is neither difficult nor painful. The cure may fail to be permanent, from the fact that the adjacent parts of the blood vessel are weak, and when the most bulging area is solidified by clot these lateral areas may give way as in the case reported.—*Therap. Gaz.*, Phila., 1903, No. 1.

PATHOLOGY AND BACTERIOLOGY.

UNDER THE CHARGE OF

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MALTA FEVER.

CRAIG (*Am. Journ. Med. Sc.*, Phila., January 1903) discusses Malta Fever in the United States Army. From his study he concludes that—(1) There occurs in the tropics and subtropics a fever which may resemble, in its acute stage, either typhoid or malaria, and in its chronic stage articular rheumatism, caused by the *Micrococcus melitensis*. (2) There are no pathognomonic symptoms of Malta fever. (3) A differential diagnosis of this fever is almost impossible, in the majority of cases, without the aid of the microscope and the serum test. He gives his own method of carrying out this test, comparing it with Wright's and Curry's. In Wright's, sedimentation tubes having a diameter less than 1 mm. are used. A salt solution suspension of an agar culture is made, and this solution is used to dilute the blood serum, the dilution varying according as the test is desired to be more or less delicate. The agglutination reaction is given as well with the dead as with the living micrococci. Curry uses tubes 3 to 4 mm. in diameter and dead micrococci. As a routine, 1 drop of blood serum was mixed with the 19 drops of normal salt solution; then equal parts of this, mixed with the salt suspension of the culture of the micrococcus, and placed in small sterile pipettes. This equals a dilution of 1 in 40. The test is macroscopic, and a reaction called positive and complete only when, in addition to the precipitation of the bacteria in the bottom of the tube, the supernatant fluid became clear. Craig, on the other hand, follows the method used for making the Widal test in typhoid fever, and prefers a dry drop of blood to fresh serum. Enough sterilised water is added to the dry drop to dissolve it, and a known portion of it put upon a clean slide. This is then diluted with a measured quantity of the bouillon culture, so as to obtain a dilution of 1 in 75. This is the dilution he prefers, though the agglutination reaction has been obtained with dilutions as high as 1 in 250. The test is microscopic, and he found it to be perfectly reliable, a large number of controls being used. Other authorities will hesitate to follow him in the use of the dried blood. There is little doubt that fresh serum is always preferable and more reliable.

MITOSIS IN CIRCULATING BLOOD.

DOCK (*Trans. Ass. Am. Physicians*, Phila., 1902) writes an interesting article on this subject. After giving a more or less complete résumé of the observations of others, he gives his own results, made in the course of routine examinations in ordinary clinical work. The material was somewhat extensive, as it included twenty-two cases of myelogenous leukæmia, three cases of chronic and two of acute lymphatic leukæmia, two of fatal megaloblastic anæmia, forty cases of chronic pernicious anæmia, and several hundred cases of secondary anæmias, chlorosis, and leucocytosis. Mitotic figures were found in both cases of acute anæmia, in two cases of chronic pernicious anæmia, one case of severe anæmia with splenomegaly, in eight cases of myelogenous leukæmia, and one of acute leukæmia. The mitosis was seen in both reds and whites, in the reds in seven cases of leukæmia and in the severe anæmias. In three cases of leukæmia only the red cells showed mitosis. Among the white cells mitosis was seen only in the myelocytes, never in the polymorpho-nuclears or in the lymphocytes. In the anæmias all the mitoses were in red cells, usually megaloblasts. The number of mitotic figures varies very much, not only in different cases, but in the same case at different times. Sometimes they are very rare, sometimes very numerous. The earlier phases of mitosis were rare compared with the later, the commonest being the diaster without signs of division of the cell body. The mitotic cells are usually orthochromatic, but many show polychromatophilia in various degrees. The facts become the more interesting when the author comes to speculate upon their meaning. He examined the associated conditions, and found that the mitotic red cells in leukæmia were not encountered only in those cells with the greatest anæmia, nor were they always encountered in such cases. There was no constant relationship between the number of red cells in mitosis and the number of nucleated red cells present, but in a single case there is sometimes a relation between the number of mitotic red cells and of all nucleated red corpuscles. Thus, in one case with very many mitotic reds, there were 7378 nucleated reds per c.mm., the total red count being 2,500,000. The number of nucleated reds fell to 2100, and then 416 per c.mm., with a decreasing number of mitoses; and, finally, with 258 nucleated red cells in the cubic millimetre, no mitoses could be found. The mitotic myelocytes were usually found in cases with high leucocytes, *i.e.* 165,000, 300,000, 608,000, 700,000, and 882,000. The last-mentioned case had by far the most, perhaps more than all the others together. But in another case with 600,000 leucocytes, no mitotic myelocytes could be found. Again, the mitotic myelocytes occurred in those cases with the highest myelocyte count, namely, 158,000, 182,000, 183,000, 212,000, and 323,000 per c.mm. Chemiotactic processes have been supposed to explain the entrance of myelocytes into the circulation, and as the process of cell division is active in these cells in the bone-marrow, some of them happen to migrate in some stage of division. The other suggestion is that myelocytes are swept into the circulation in a passive way, and this would equally explain mitotic myelocytes in the circulation. The presence of nucleated red cells suggests active regeneration of the blood, but this is difficult to prove. His final conclusion is that, so far as diagnosis and prognosis are concerned, the facts do not justify any reliance being placed upon them. A few mitotic megaloblasts do not indicate a bad prognosis in the immediate future. One of his patients lived for a year in comparative health after such mitoses were found. Atypical mitoses is apparently rather more serious in its indication than the normal process, but probably only because it is found with extremely active cell development, and because this is often a part of unfavourable conditions.

The Pathogenic Agent of Whooping-Cough and its Serotherapy.

Leuriaux (*Semaine méd.*, Paris, July 16, 1902) has gone further than many other writers, and not only describes a pathogenic bacillus of whooping-cough, but also the results obtained by him with its curative serum. He describes the bacillus as a short, somewhat thick bacillus, ovoid in form, with rounded ends. It usually occurs in groups in the secretions of the respiratory tract. He gives a brief account of its method of isolation, manner of culture, and the process of securing the serum. He has used this serum in sixty-six cases of whooping-cough with a loss of only five. It usually works a cure in from five to eight days, if administered early. It ought to be injected as soon as the diagnosis is certain, and the earlier the better. The quantity used varies with the age, being 5 c.c. for infants from 6 months to 2 years old and 10 c.c. to older patients. One dose is generally sufficient when given early enough, but a second and third may be given if the symptoms abate very slowly. It is not necessary to use any other treatment but sometimes a slight emetic may be given with advantage.

Unclean Finger-Nails a Cause of Tuberculous Infection in Children.

Preisich and **Schütz** (*Berl. klin. Wchnschr.*, May 12, 1902) examined the finger-nails of sixty-six children, and found tubercle bacilli in fourteen. The examinations were made in the winter months, when children spend most of the time indoors. The dirt removed from the finger-nails was examined by stained preparations and by injecting guinea-pigs. Most of the latter died because of a mixed injection, so that tuberculosis did not have time to develop. All but 5 per cent. of the patients gave a history of tuberculosis in the family, and the cases in which the bacilli were found had brothers or sisters suffering with tuberculous lung, gland, or bone disease. The authors believe that children may carry infection from their finger-nails to their mouths or noses, and thus cause abdominal or pulmonary tuberculosis. They also believe that decayed teeth are a source of tuberculous infection in children.

Schueller's Parasite of Carcinoma.

When the review of Schueller's book appeared in this Journal some eighteen months ago, the close similarity between the cancer parasite described by him and cork cells was pointed out. Since then some discussion on the subject has occurred, mostly throwing doubt on the bodies being living organisms. Mohr (*Deutsche med. Wchnschr.*, Leipzig, November 20, 1902) takes up the cudgels for Schueller, and disagrees with Völcker, who thinks the bodies are cork cells. Mohr thinks that the large size of the capsules of the bodies serves alone to absolutely distinguish them from cork cells. Furthermore, he prepared a large number of carcinomatous sections by means of a technique which absolutely precluded any possibility of contamination with cork cells, and in all of these sections the presence of Schueller's parasites was demonstrated. It is believed that these observations will definitely negative the contention that these parasites and cork cells are one and the same.

METABOLISM IN CHRONIC TUBERCULOSIS.

MITULESCU (*Berl. klin. Wchnschr.*, November 24, 1902), from a study of the nitrogen and phosphorus metabolism in cases of tuberculosis, particularly the pulmonary form, concludes that the bodily protective processes are both mechanical and chemical in nature. The former consists of a barrier of cells around the bacilli, and the latter in the production of substances, some of which are destructive of the bacilli, and others counteractive of the bacillary toxines. The body is able to successfully combat the infection, in proportion as these processes are effectively and continuously maintained. This is possible only when satisfactory nutrition is maintained. Under-nutrition of the body cells must lead to a reduction in their vitality, and a consequent inability to cope with the infective process. In the presence of infection a double work is thrown upon the body cells—(1) They must maintain their nutrition; (2) they must produce the bactericidal and antitoxic secretions which directly assail the infecting bacilli. Since the satisfactory execution of the first of these tasks is absolutely essential to the proper performance of the second, evidence of its completeness has an important bearing upon the prognosis and treatment of the case. By a comparison of the daily consumption by the patient of nitrogen and phosphorus, with the total daily excretion of the same elements in the urine and fæces, we are able, in great measure, to judge of the status of cell metabolism. If the excretion exceeds the consumption, we know that the cells are suffering in nutrition, and consequently must fail in resisting successfully the infection. Observation has shown that in acute, and in the first stages of chronic, tuberculosis the excretion of these substances almost invariably exceeds their consumption. In chronic tuberculosis, as the disease progresses the excretion and consumption become more nearly equalised, especially in those cases in which the progression is favourable. If hæmorrhages occur, the excretion of nitrogen and phosphorus in the urine and fæces becomes temporarily far less than the consumption, because of the large amount lost in the evacuated blood. An increased excretion over consumption signifies, in all cases, either that the cells are overworked or undernourished, and is one of the first signs that the body is losing ground. In advanced cases this becomes more marked, and is partly due to the mixed infection which comes on in the later stages.

PHAGOCYTOSIS, SYNTHESIS, AND OTHER INTRACELLULAR PROCESSES.

ARNOLD (*München. med. Wchnschr.*, November 25, 1902) draws a distinction between soluble and insoluble substances in their method of absorption by leucocytes. He does not think that the former are taken up by a process of phagocytosis. In phagocytic cells, such as eosinophiles (most authorities deny that eosinophiles show phagocytosis), which have been placed in contact with fat, some of the fat is taken up by phagocytosis, but another part is absorbed in a liquid state and formed into fat globules within the cells. Again, when fat is brought into contact in excessive amount with the tissues, other cells, such as the epithelial, which are able to exert no phagocytic processes, show, after a time, an abundant presence of fat within their protoplasms, and in such cases must be formed synthetically. Similar observations have been made with respect to the presence of the various iron compounds in cells, so that it is evident that in many instances the presence of soluble foreign compounds within the bodies of leucocytes is not to be ascribed to their phagocytic action.

THE PRODUCTION OF HÆMOLYTIC AMBOCEPTORS BY MEANS OF SERUM INJECTION.

IT has been known for some time that, if an animal is injected with red corpuscles from another species, there appear in its blood serum new substances—so-called hæmolytic amboceptors (immune bodies), which have the power of fixing themselves to the corpuscles of the species from which the blood used for injection was derived. Through this fixation they enable another body (the complement) contained in normal fresh serum to bring about solution of the red corpuscles (hæmolysis). The fixation of the amboceptors in the red corpuscles is rendered possible by the presence in the latter of certain chemical groups known as receptors. The union between the receptor and amboceptor is specific, and is a strictly chemical process, in which the morphology of the cell is of subordinate importance. Morgenroth (*Munchen. med. Wchnschr.*, June 24, 1902) has shown that the cell is not essential to the production of amboceptors. He succeeded in producing them by injecting blood serum entirely freed from cells into an animal of another species. In the experiments, rabbits were injected with goat serum. The results were similar to those produced by the injection of goat's blood, and showed that the serum contains receptors identical with those found in the red corpuscles. Such receptors are also present in the urine. Whether they are secretory or decomposition products is not definitely known. Their presence in the urine suggests that they are decomposition products. While, however, the receptors may be derived from the decomposition of red corpuscles or other cells, it is also possible that they represent physiological groups that have been thrown off in the metabolism of these cells. Actual experiments with the amboceptors developed in rabbits by the injection of goat serum and blood—that of the ox being used—showed that hæmolysin did not take place, on account of the presence of anti-complements, that is, of substances which counteract the solving action of the complement. By proper methods the anti-complements could be overcome, and hæmolysis could be brought about.

PHYSIOLOGY.

UNDER THE CHARGE OF

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INFLUENCE OF HIGH ALTITUDES ON METABOLISM.

Zuntz, following up work that he carried out during an ascent of Monte Rosa, describes very fully the results of two investigations on the influence of balloon ascents on respiratory interchange, etc. (*Arch. f. d. ges. Physiol.*, Bonn., Bd. xcii. Hefte 10, 11, 12, S. 479). In both cases Zuntz and his companion, v. Schrötter, ascended to a height of about 5000 metres, and investigated the effect upon composition of blood, respiratory mechanism and interchange, pulse, urine, etc. The results of their investigations may be shortly summed up as follows:— 1. There is no alteration in the morphological characters of the blood even after remaining for ten hours at an altitude of 5000 metres. 2. The pulse and blood pressure remain unaffected except in so far as subjectively a temporary oxygen hunger may have made itself felt. 3. There is no alteration in the reducing power of the tissues when tested by Henocque's method. 4. There is an increase in pulmonary ventilation, but this is not the result of the fall in atmospheric pressure, but is due to the influence of other meteorological factors—for example, the solar rays and cold. 5. A qualitative alteration in oxidation processes, shown by a rise in the respiratory quotient, is noticed first of all at a height of about 4000 metres, but there are variations in different individuals. 6. The intensity of the sensations of oxygen starvation does not run parallel with the alterations in the respiratory quotient. 7. An increase in the amount of oxygen used up, which the observers noticed in some cases, is the result of increased respiratory work or tremors of voluntary muscles, etc.

THE MECHANISM OF PANCREATIC SECRETION.

The important work of Pawlow, on the work of the digestive glands, emphasised the importance of a reflex nervous mechanism in secretion, and the Russian observer held that that stimulus which he found most active for the secretion of pancreatic juice, namely, hydrochloric acid, acted reflexly through the duodenal mucosa. Bayliss and Starling (*Journ. Physiol.*, Cambridge and London, vol. xxviii. p. 325), in their recent work on this subject, find that pancreatic secretion is still called forth on the introduction of weak hydrochloric acid into the duodenum, after all nerve connections of duodenum and jejunum with the central nervous system have been cut. They hold that the mechanism of pancreatic secretion is somewhat of this kind—When the acid comes into contact with the cells of the duodenal mucosa (or that of jejunum), a certain substance, named by them secretin, is produced, which is carried from the seat of formation by the blood to the pancreas, where it acts as a specific stimulus of the pancreas cells, and calls forth a secretion of pancreatic juice. The amount of the juice so secreted appears to be more or less proportional to the amount of secretin. As a proof of this, they adduce evidence of the activity of acid extracts of the duodenal mucosa, which have a specific action in pancreatic secretion. Secretin is not destroyed by boiling in acid, neutral or alkaline aqueous solution, or in boiling alcohol, and hence is not a ferment. It is insoluble in water and alkalies, is not precipitated out of aqueous solution by tannic acid or alcohol or ether, but is easily destroyed by the majority of metallic salts, oxidising substances, and pancreatic juice. It is only slightly diffusible. The juice secreted after injection of secretin only possesses proteid digesting powers after enterokinase has been added, while it splits up fats (action increased by addition of intestinal juice), 'and transforms starch into maltose in the usual way. Apart from a slight action upon bile secretion, it has no effect upon the activity of any other gland. So far as can be made out, it is not absorbed from the lumen of the gut. It disappears rapidly from the tissues, and cannot be obtained in any secretion or from any other part than the intestinal mucosa.

THE EXCITABILITY OF THE CEREBRAL CORTICAL AREAS FOR THE EXTREMITIES AFTER SECTION OF CEREBROFUGAL PATHS.

MAX ROTHMANN (*Arch. f. Physiol.*, Berlin, 1902, Hefte 1 and 2) carried out experiments on dogs and monkeys with regard to the centrifugal paths for motor areas. The author describes the results of seventeen operations on dogs, consisting of total and partial destruction of pyramidal tracts, Monakow's bundle, and combined destruction of both of these motor paths in the medulla, cervical, and lower dorsal regions. After an interval of from fourteen to twenty-eight days, the cerebral cortex was stimulated, and, from the results so obtained, conclusions were drawn as to the paths which the centrifugal impulses take. The following were the main results:—1. Impulses from cortex pass not only by the pyramidal tract, but also by Monakow's bundle, to the opposite side. 2. After section of the pyramidal tract, stronger currents are necessary to evoke contractions of the opposite extremities than under normal conditions. 3. Destruction of Monakow's bundle alone does not influence the response to cortical stimulation. 4. After combined destruction of the two tracts, cortical stimulation, of an intensity sufficient to produce movements of the same side, calls forth no response on the opposite side. 5. The anterior column tracts have nothing to do with the conduction of the impulses from electrical stimulation of the cortex.

From similar experiments on monkeys the following results were obtained:—1. Some weeks after destruction of pyramidal tract on both sides, only two small regions of the extremities, the one of finger, the other of toe, movements, respond to cortical stimulation. 2. The fibres passing from each cortical extremity centre are distributed over the whole cross-section of the pyramids, so that section through the lower part of the pyramidal crossing does not diminish the response to cortical stimulation. 3. Section of Monakow's bundle does not influence response to cortical stimulation. 4. Combined section of both paths on one side brings down the response to cortical stimulation to a minimum, and this is especially true of finger and toe movements. There is never absolute loss of response. 5. In monkeys Monakow's bundle does not seem to be nearly so essential as the pyramidal tract; in dogs, the former, although relatively less important than the latter, still is an important conduction path. The return of excitability in the opposite extremities, and the gradual disappearance of the increased excitability of the same side, is referred to by the author, as it has been by many others. The response to cortical stimulation takes place in many animals where the pyramidal tracts are not developed.

In a later paper by the same writer (*Arch. f. Physiol.*, Berlin, 1902, S. 440), reference is made to subsequent experiments on monkeys. On complete section of the pyramidal tract of one side, the early paralysis soon disappears, and in about twenty days after the operation it is impossible to distinguish the animal from a normal one. Not only was there in this case destruction of the pyramidal fibres, but also of the ventral column of the same side.

After section of Monakow's bundle alone, at the level of the pyramidal crossing, there is a preliminary stage of weakened muscular activity even more marked than after destruction of the pyramids, but in the case of the former there is a very rapid return to practically a normal condition; in the case of the latter there is greater delay. After destruction of both tracts on the same side, along with destruction of the anterior column, pyramidal tract, and the cerebellar spinal tracts of the opposite side, there is a temporary, but complete, paralysis of the four limbs. Even on the second day after the operation, the animal is able to carry out movements which it could not do on the preceding day, and very shortly all the movements return, but very often weakened in degree. In one animal the right anterior and lateral columns and only a small portion of the posterior column in the front, along with some of the grey matter of the same side, were destroyed. In this case the extremities of the same side were completely paralysed for four days, then gradual restitution of the right hind-limb began to take place, until, fourteen days after the operation, it differed but slightly from the left limb. The return of arm movements took place more slowly. From all these experiments on monkeys, it was seen that neither the isolated destruction of the pyramidal fibres, nor a combined destruction of these, along with the anterior column fibres and Monakow's bundle, was able to permanently and completely paralyse movements of the injured side. In the monkey, unlike the dog, some of the cortical centrifugal fibres pass down the anterior columns.

DISEASES OF THE EYE.

UNDER THE CHARGE OF
GEORGE A. BERRY, M.B., F.R.C.S.Ed.,
OPHTHALMIC SURGEON, EDINBURGH ROYAL INFIRMARY;
AND
W. G. SYM, M.D., F.R.C.S.Ed.,
ASSISTANT OPHTHALMIC SURGEON, EDINBURGH ROYAL INFIRMARY.

MIND-BLINDNESS FOR OBJECTS.

Lépine records a case which is interesting as being in a sense the converse of word-blindness. It was that of a man who had had partial and transitory attacks of paralysis for some months. When Lépine saw him, there was no aphasia or amnesia, speech was perfect, and vision was also apparently quite good. It was not, however, quite normal, for, though he had no hemianopsia, he had some difficulty in "fixing" any object, and he could not read fluently at all. Objects which, in the course of his business (as a traveller for watches, etc.), had been very familiar to him, he recognised promptly and named correctly, but any other article, even if quite a common thing, he failed to name or even to recognise; he could not imagine, for example, to what use a measuring-tape could be put when it was shown to him. He could write to dictation and copy perfectly, but if asked to draw a common object, such as a tree, he merely wrote down the word "tree," without being able to make the slightest effort to sketch it; he seemed to have completely lost the visual memory of it. The picture of an object he appeared to recognise more readily than the actual object. When he looked at an article he recognised its outline, form, relief, colour, etc., but remained entirely ignorant of its nature or use.—*Rec. d'Opht.*, Paris, 1902, tome vii.

TOTAL AMAUROSIS FROM FUNGUS POISONING.

The poorer classes in Italy devour large quantities of various fungi, attracted thereto by the belief that they are of high nutritive value, and by the fact that they cost little or nothing. The peasants usually are fairly well aware which varieties are edible and which are dangerous, but sometimes the town-dwellers, when funds are low, come out to the country parts with the view of gathering some for themselves, and are apt to light upon poisonous species. Acute symptoms produced in this way are usually those of gastro-intestinal inflammation, of cardiac failure, or of pulmonary complications. Valenti records an instance with which he recently met, in which the symptoms were decidedly unusual; he states that there are few such to be found in literature. A man, æt. 26, in good health, ate a quantity of fungi, some of which were identified from his description as belonging to a family some at least of the members of which are highly poisonous. Symptoms of gastro-intestinal distress began to appear the same day, with constipation and anuria. The following night severe pain came in the right eye, rendered worse on movement of it, and there were clearly marked symptoms of a central scotoma. In five days, sight in that eye was reduced to perception of light, and shortly thereafter the left eye began to exhibit precisely similar symptoms. The ophthalmoscope then showed anæmia of the discs without any blurring of their margins; the arteries were very narrow, and the pupils were somewhat dilated. The patient could barely tell light from darkness. The chief treatment consisted in purgatives and tonics; for eight days there was no improvement, but vision then began to return, and eventually he had secured, when last examined, $\frac{3}{10}$ of full vision. The case appears to have been one of acute retrobulbar neuritis, caused by intoxication by some of the poisonous constituents of the fungus.—*Ann. di ottal.*, Pavia, 1902, tomo xxxi.

The Influence of the Sympathetic upon Accommodation.

What relation, if any, has the great sympathetic to accommodation? Several papers dealing with this question have recently been published, in which the conclusions are by no means in precise agreement. To go back to 1891, Morat and Doyon showed that after division of the sympathetic there was distinct diminution in size of the images on the anterior surface of the lens, these becoming larger again on stimulation of the cut end; this indicated that, when the nerve was divided, accommodation occurred, and when it was stimulated accommodation was to some extent negatived. They put it that there are two nerves dealing with accommodation—to wit, the third cranial, which excites the ciliary muscle, and the sympathetic, which inhibits it; or, to put the matter another way, there are the third, which adapts the eye for near objects, and the sympathetic, which adapts it for distant ones. With these conclusions some of the most recent experiments agree, but certain observers have not the same opinion. One experiment of Hess's is of considerable value in this matter. He showed that if a moderate contraction of the ciliary muscle is kept up by means of a feeble current, and during the passage of that current a sudden and vigorous stimulus is applied to the sympathetic, the pupil dilates at once, but the indicator shows no alteration in the state of contraction of the ciliary muscle. In certain cases, this is accompanied by a diminution in the refraction, but if this should occur—and it does not always occur—it may be explained by the disturbing action of the peripheral portions of the lens left uncovered when the pupil dilated. As regards the indication of increased contraction (or the reverse) afforded by alteration in the size of the images on the lens, it is not safe to place too much reliance upon such measurements; they are extremely difficult to make accurately, and yet, if any conclusion is to be drawn from them, extreme accuracy is required. In all experiments it is necessary to be exceedingly careful lest the needle of the indicator, passed into the anterior chamber and lying upon the face of the lens, should be caused to move either by the dilating iris itself, or by currents set up in the aqueous humour when the pupil is in process of rapid dilatation. At present, then, there is no agreement as to the influence of the sympathetic, for Doyon and Morat regard the sympathetic as having an action of negative accommodation, Terrien and Camus say it has an action of positive accommodation, and Römer and Dufour say it has none at all.—*Arch. d'Ophth.*, Paris, June 1902; v. Graefe's *Arch. f. Ophth.*, Leipzig, June 1902, Bd. liv. S. 3.

THE FIELD OF VISION IN FUNCTIONAL NERVOUS DISORDERS.

IN many functional nervous diseases in persons after serious injury, *e.g.*, after railway accidents, and in other conditions, valuable information may sometimes be obtained by a careful examination of the field of vision for white and for colours. v. Reuss (Vienna) has devoted a great deal of attention to this matter, and, having examined more than eighty persons, of whom the great majority were cases of railway injury, classifies them into three divisions, each with its special peculiarities. These are —(1) Cases of hysteria, (2) cases of neurasthenia, (3) mixed cases. Hysteria is distinguished by the following features in the field of vision :— Concentric limitation with normal or reduced visual acuteness, along with a normal aspect of the fundus. This limitation varies only slightly and slowly, if it varies at all, and at the same time the colour field is reduced. The field does not vary during the actual examination, as does that of neurasthenia, and does not enlarge when the patient's attention and psyche are stimulated. Ring scotomata are sometimes present.

In neurasthenia the chief characteristic is the easy exhaustion of portions of the retina, giving rise to visual fields which change and alter under examination. He recognises no less than five types, into the details of which it is not necessary here to enter, and which are really to a large extent dependent upon the precise mode of examination rather than upon the actual pathological condition. Perhaps the best marked of these types is that which has long been known as the exhaustion spiral: its characteristic is that, as the examination of the various meridians of the field proceeds, the active area becomes progressively smaller, so that when the examiner returns to any meridian which he has tested at a previous circuit, he finds the field along that line smaller by a number of degrees than it was before. The cases of mixed hysteria and neurasthenia, of course, presented certain of the characters of both varieties. The conclusion, then, is, if the field does not change while the examination is being conducted, this points to hysteria; if the fields, normal at first, become contracted during examination, or if, reduced at first, they expand during examination, this points to neurasthenia; if the field, reduced at first, becomes still further reduced during anæsthesia, that is evidence of hystero-neurasthenia.—v. Reuss, "The Field of Vision in Functional Nervous Disorders," Leipzig.

REPORTS OF THE MEDICAL SOCIETIES.

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Edinburgh Medico-Chirurgical Society.—*February* 4, 1903.—Sir **Thomas R. Fraser**, President, in the chair.—Dr. **Geo. Gibson** showed —(1) A case of adhesive mediastinal pericarditis.—Dr. **Melville Dunlop** showed two cases of syphilitic arthritis.—Dr. **John Thomson** showed a child, æt. 6 years, with a peculiar form of giant growth affecting the whole skeleton.—Mr. **Cotterill** showed the following specimens:—(1) Gangrene of the gall bladder in a case of cholelithiasis; (2) sarcoma of skin (with photograph); (3) parenchymatous goitre (with photograph); (4) sarcoma of testicle with metastatic growths in the occipital lobe of the brain, cerebellum, heart, lungs, liver, and small intestine (with microscopic sections); (5) symmetrical exostoses of tibia occurring in above sarcomatous patient (with photograph); (6) round-celled sarcoma of undescended testicle, closely simulating the so-called cartilaginous tumour of the testis.—Dr. **Alexander Bruce** read a paper on "A Case of Double Paralysis of the Lateral Conjugate Deviation of the Eyes." The patient, a female, æt. 27, received a blow on the head which rendered her unconscious for about twenty minutes. The next day she felt giddy and had a slightly faint feeling. The giddiness persisted, and was most marked when she was walking, and often caused her to stumble, and generally to the right side. There was also a feeling of stiffness in moving the eyes to the left side, as also in moving the left side of the face. There was crossed diplopia, due in all probability to paresis of the left internal rectus. The other ocular muscles were unimpaired. Later, left-sided facial neuralgia developed, and complete loss of the lateral movements of the eyeballs. Headache, at first slight, now became severe. The third nucleus and the third nerve were apparently unaffected, and it was thought that the lesion was further down in the position of the sixth nucleus, which innervates the sixth nerve and the third nerve on the opposite side. Pyrexia and other symptoms of meningitis supervened, and the patient died. The family history pointed to a possible tuberculous taint, and the diagnosis was a lesion of the floor of the sixth ventricle, involving the nuclei of both sixth nerves. This was confirmed at the post-mortem examination, a tuberculous nodule being found in that region.—Dr. **Rainy** and Mr. **Stiles** gave a lantern demonstration of skiagrams illustrating various (chiefly tuberculous) bone affections in children.

Edinburgh Obstetrical Society.—*Wednesday, February* 14, 1903. —Dr. **James Ritchie**, President, in the chair.—Sir **Halliday Croom** showed—(1) A large fibroid from a patient six months advanced in pregnancy. There was no possibility of delivery "per vias naturales."

He had hoped to postpone the operation till seven months were passed, but the patient developed an acute attack of peritonitis, and immediate operation became necessary. The child lived only a very short time. (2) Three specimens of vaginal hysterectomy—(*a*) Uterus from a patient who had all the symptoms of cancer, and a pathologist reported that a scraping was malignant, but, after the removal of the uterus, it proved to be only a fungating submucous fibroid; (*b*) an advanced case of cancer of the uterus, which he had removed only by the express desire of the doctor and the patient—the patient lived only a short time; (*c*) a case of very early cancer removed successfully. (3) A double hydrosalpinx, removed for severe dysmenorrhœa, but the pain had in no way been relieved. (4) A large fibroid removed by hysterectomy four years after removal of the ovaries.—Dr. BERRY HART showed a fibroid tumour, whose feature was that it had developed mainly in the left broad ligament.—Dr. SCOTT MACGREGOR showed a fibro-sarcoma of the uterus removed by pan-hysterectomy.—Dr. D. J. GRAHAM showed an ovarian tumour, removed from a woman æt. 22. It was so closely incorporated with the uterus that it was necessary to remove the uterus as well.—Dr. GEO. ROBERTSON showed an aborting tubal mole and a parovarian tumour removed from the same patient.—Dr. HAULTAIN showed numerous fibroids in illustration of his paper.

COMMUNICATIONS.—Dr. HAIG FERGUSON read a paper on "Some Experiences in the Gynæcological Surgery of the Abdomen." He gave details of many unusual conditions that he had met with, both during the operation and during the after-treatment and subsequent progress of the cases.—Dr. HAULTAIN read a paper "On the Treatment of Uterine Fibromyomata, with a record of Twenty-eight successful Cases of Abdominal Hysterectomy by the Supra-vaginal Method," which is published in the present number of this Journal.

GLASGOW MEDICO-CHIRURGICAL SOCIETY.—*January* 23, 1903.—Dr. MIDDLETON showed two children with uncommon forms of heart disease. The first child, a boy, æt. 9, had been suddenly attacked with right hemiplegia without any previous symptoms of illness. There was a double aortic murmur with a V.S. murmur at the lower end of the sternum on the left side. The second child, a boy, æt. 7, had great dilatation of the heart. In this case also there was a double aortic murmur with a V.S. at the apex, and another V.S. of different quality at the lower end of the sternum on the left side.—Dr. LINDSAY STEVEN showed a child, æt. 6 years, with tachycardia. The pulse averaged from 130 to 160; it had been as high as 180, and only twice as low as 100. There was no sign of cardiac disease. The child took ill, three weeks before admission to hospital, with sickness and vomiting. The urine presented faint traces of albumin. There was a history of diphtheria two years ago.—Dr. BARCLAY NESS showed a case of leucoderma.—Dr. LEWIS M'MILLAN showed a case in which there was paralysis of the muscles supplied by both third nerves. The patient was a painter, æt. 63 years. He had suffered from diplopia for the last six months. There was slight ptosis of the right eyelid, but not of the left. The movements of both eyes were restricted in all directions except outwards. The field of vision was not restricted. Dr. M'Millan was of opinion that the symptoms were due to a double nuclear lesion. The patient was improving under biniodide of mercury.—Dr. **Lindsay Steven** gave a sketch of the development of our knowledge of acute lobar pneumonia.

February 6, 1903.—Dr. **Dun** showed—(*a*) A case of xanthelasma extensively affecting the eyelids and body; (*b*) a case of unusual deformities of hands and feet, with skiagraphs. The patient was a female, æt. 16. The thumbs had three phalanges like fingers, and there were six toes and six metatarsal bones on each foot.—Dr. **Hinshelwood** showed three members of the same family, exhibiting different forms of congenital specific disease of the eye. The eldest was a girl with an irregular pupil, the result of iritis. The second, a boy, showed nothing to the naked eye; but the ophthalmoscope revealed punched-out areas of atrophy in the choroid. The youngest, a girl, also showed nothing to the naked eye; but the retina had the appearance of being sprinkled with snuff. The eldest suffered from deafness, and all had the characteristic teeth of congenital syphilis. The mother was a healthy-looking woman with no symptoms of syphilis. She had had eleven children, six of whom were now living. Of the other five, three were still-born, one at 7 months, the others at full time; one died two hours after birth, the other at 3 months. None of the children had syphilitic facies.

Glasgow Pathological and Clinical Society, *February* 9, 1903.—The President, Mr. A. E. **Maylard**, in the chair.—Dr. J. R. **Riddell** demonstrated some eight cases of rodent ulcer, which had been treated, or were undergoing treatment, in the electrical department of the Glasgow Royal Infirmary.—Dr. T. K. **Monro** and Dr. A. N. **Macgregor** showed a patient, a marine engineer, æt. 26, who for about five years has suffered from paroxysms characterised by severe pain, with swelling and hæmorrhages in many parts of the body, including the skin, mucous membranes, viscera, and articular and periarticular structures. The case, which is an extremely curious one, will be reported fully at a later date.—Dr. J. **Wainman Findlay** showed a patient, the subject of rheumatoid arthritis, with multiple subcutaneous nodules of a fibroid character.—Dr. R. **Barclay Ness** showed a case of "head-nodding," which has been present for about two years, in a girl 9 years of age.—Dr. E. **Arthur Gibson** showed the following specimens:—(*a*) Cancer of the body of the uterus; (*b*) uterus septus with multiple myomata; (*c*) specimen of tubal pregnancy about the second month, with cystoma of the corresponding ovary.—Dr. **John Anderson** showed an acephalic monster (at 5 months), with numerous developmental defects.—The Secretary, for Professor **Muir**, showed as a fresh specimen, a carcinoma of the stomach, which presented unusual characters.—As card specimens, Dr. **Anderson** showed a specimen of cancer of the stomach which presented unusual macroscopical appearances; and Dr. **Hugh Maclaren**, a fracture of a rabbit's femur in which mal-union had occurred, with great deposition of callus.

ANALYTICAL REPORTS.

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Milk Chocolate.

(Cadbury Brothers Ltd., Bournville.)

We have been favoured with samples of Cadbury Brothers' Milk Chocolate. Its composition per cent. is as follows:—

Cadbury's Milk Chocolate.

		Ordinary Sweet Chocolate.
Proteid	10·3	5·06
Sugar, Saccharose	42·0	63·81
Lactose	10·9	
Fats, Theobroma	22·6	15·25
Milk	7·7	
Ash	2·1	2·15
Water	1·6	1·55
Remainder	2·8	12·18

The alkalinity of the ash is equal to 0·16 per cent. as K_2O. The second column gives the relative proportions of an ordinary type of sweet chocolate. It keeps well, it eats well, does not cloy the palate; is indeed "guid gear" in little bulk. Pleasing as a sweetmeat, its nutritive value and satisfactory qualities serve to make it an excellent form of food for cyclists, and all those indeed who require to consider how best to obtain quality without over much quantity.

The great advantage it possesses over ordinary chocolate is seen when the relative nutritive and sustaining values are considered. With rather over double the proteid content, almost twice as rich in fats, a fourth of which is in the form of milk fat, with considerably less sugar, and with one-fifth of the sugar present in the form of unfermentable lactose, it is necessarily of much greater dietetic importance.

Odol.

(Odol Chemical Works, London, S.E.)

Odol is a colourless alcoholic solution, agreeably scented, which, on addition to water, forms a grey, then a milky, opaque mixture, and is designed for use as an antiseptic dentifrice and mouth-wash. It appears to contain alcohol, oil of peppermint, a trace of saccharin, 2·5 per cent. of a salol analogue of liquid form, with small quantities of oil of cloves and of caraway. On first smelling it, one is reminded of the scent of eau-de-cologne, but, after it has been allowed to evaporate for the most part, a distinct odour of its own can be detected, and the peppermint becomes more prominent.

Odol is therefore an alcoholic solution containing a salicylic derivative akin to salol, along with certain volatile oils, especially oil of peppermint. It is thus well adapted for the purpose it is recommended for, and constitutes a pleasant and efficacious dentifrice, for cleaning the teeth and disinfecting the oral cavity. The numerous tributes to its efficacy from high sources are not awanting, nor to be despised.

MONTHLY NOTES
ON METEOROLOGY AND VITAL STATISTICS.

By A. LOCKHART GILLESPIE, M.D., F.R.S.E., F.R.C.P.Ed.,

MEMBER SCOTTISH METEOROLOGICAL SOCIETY.

Meteorological Means for the East of Scotland District, for the Four Weeks ending January 31, 1903.

	Temperature.			Rainfall in Inches.		Sunshine. Hours.		Mean Daily Variability of Temperature.
	Mean.	Accumulated Day-Degrees. Above 42°.	Accumulated Day-Degrees. Below 42°.	Actual.	Accumulated from Jan. 4.	Actual.	Accumulated from Jan. 4.	
Mean	36°·9	29°	170°	2·5	...	41	...	3°·5
Observed	36°·4	25°	179°	3·9	...	26	...	1°·8
Difference	−0°·5	−4°	+9°	+1·4	...	−15	...	−1°·7

Vital Statistics.

Mortality in Four Large Towns in the East of Scotland (Edinburgh, Dundee, Aberdeen, and Leith), during January 1903. Actual Numbers and Rate per 10,000 per annum.

	Total.		Constitutional Diseases.		Circulatory System.		Respiratory System.		Nervous System.	
	No.	Rate.	No.	Rate.	No.	Rate.	No.	Rate.	No.	Rate.
Deaths expected and Mean Rate for 1891–1901	1358	223·0	234	38·4	130	21·3	308	50·6	147	24·1
Actual Deaths and Rate per 10,000	1325	217·5	246	40·4	155	25·4	279	45·8	146	23·9
Difference from Mean	−33	−5·5	+12	+2·0	+25	+4·1	−29	−4·8	−1	−0·2

	Digestive System.		Urinary System.		Pneumonia.		Phthisis.		Cancer.	
	No.	Rate.	No.	Rate.	No.	Rate.	No.	Rate.	No.	Rate.
Deaths expected and Mean Rate for 1891–1901	84	13·7	31	5·1	113	18·6	114	18·7	56	9·1
Actual Deaths and Rate per 10,000	100	16·4	28	4·6	129	21·2	110	18·0	57	9·3
Difference from Mean	+16	+2·7	−3	−0·5	+16	+2·6	−4	−0·7	+1	+0·2

The population as estimated to the middle of 1903 for the four large towns in the East of Scotland, dealt with in these notes, is taken by the Registrar-General for Scotland to be—

Edinburgh	327,441
Dundee	162,805
Aberdeen	160,780
Leith	79,552
Total	730,578

This represents an increase of 9427, or 1·3 per cent. over the number for 1902.

The total number of deaths during January was slightly below the average; respiratory, phthisical, urinary, and nervous causes contributing to the deficit. Deaths, however, from circulatory and digestive diseases were 19 per cent.—from pneumonia, 14 per cent.; from constitutional diseases, 5 per cent.; and from cancer, nearly 2 per cent. above normal. Influenza was recorded as responsible for 28 deaths.

Owing to a year consisting of fifty-two weeks and one day, in leap years two days, it becomes necessary to allow for these extra days when dealing with yearly returns in terms of weeks, by regarding occasional years as comprising fifty-three weeks. 1902 has been given an extra week, so that the values for 1903 refer to the year from the 4th of January.

The mean temperature for the four weeks from the 4th to the 31st of January was slightly below the average; the rainfall, 56 per cent. above; the duration of bright sunshine, 36 per cent. below the normal. The mean daily variability of temperature was nearly 50 per cent. below normal.

The figures for 1902, adding to the totals, given in the Journal for February, the values for the fifty-third week ending 3rd January 1903, to render them officially accurate, are as follow:—

Dry degrees of temperature—above 42° F., 2066, -325; below, 42° F., 978, $+31$; rainfall, 27·3 in., $-5·0$ in.; hours of bright sunshine, 1133, -174.

EDINBURGH MEDICAL JOURNAL.

EDITORIAL.

The New Licensing Bill for Scotland.

No Bill affecting the regulation of the drink traffic could possibly give general satisfaction to people of such varying habits, and holding such irreconcilable views on the subject, as the inhabitants of this country. Apart from extremists on both sides, there is a degree of uncertainty and hesitation on the subject in the minds of those unbiassed individuals, who are said to form the backbone of the opinion of this country, which is sufficient to indicate that any action affecting the regulation of the drink traffic should be cautious, and, in a sense, experimental. The pathetic failures which Draconic enactments have met with in other countries, are sufficient to warn sensible politicians of the danger of attempting the impossible. Viewed in this light, the present Bill can only be described as a wise measure. That it will disappoint the extreme temperance reformers goes without saying, for it cannot appeal to them as a temperance measure at all. Dissatisfaction may also be anticipated from those politicians who refuse to acknowledge as right any administration of public affairs not conducted by the direct representatives of the people. As a general principle such a political axiom may be conceded, but it may be pointed out that, so far as this special question is concerned, there are peculiar circumstances which demand that the greatest caution should be exercised in attempting to disturb the *status quo*. It may be that justices in certain districts are too favourably disposed towards the "trade," but it is necessary to bear in mind that in the case of an elected body such as a Town or County Council, wholly entrusted with the disposal of licences, there would be an obvious danger that their election would practically turn upon the views of individual members upon the drink traffic. On the other hand, an *ad hoc* elected body would mean the establishment of local option, for which principle the country is far from being prepared. The present Bill has avoided these obvious pitfalls, and has resolved itself into a consolidating and rectifying enactment, intended to make more workable and more perfect the existing legal machinery. A few incidental but important details are added, such as the black-listing of habitual drunkards; the prohibition to purchase drink by such a declared drunkard, or to sell him drink; the regulation of clubs; and the protection of young children from want of proper care on the part of drunken parents. The omission of the provision to enable a husband or a wife to obtain judicial separation, on the ground of intemperance, which has been inserted into the similar English Bill, may at first sight appear unfortunate, but in view of the difference of the conjugal laws in the two countries, and more especially of the fact that there is no adequate provision as yet for the early treatment of inebriates, the omission cannot be regretted.

Regarding the general utility of the Bill, as a measure of temperance reform, it must be remembered that all legislation in this direction, to be effective, must be equivalent to the force of the desire in the community for alcoholic stimulants. The kernel of the drink question in a modern civilised community lies in the incontrovertible fact that a preponderating section of the people desire alcohol, it may be for personal or selfish reasons, it may be as a social adjunct, or it may be on account of a morbid craving for stimulants. It is only as this desire decreases that legislation can advance, for it is abundantly evident from the contemporary experience of such countries as Norway and the State of Maine, that any restrictive legislation which outstrips the demand for alcohol in a community, can only result in a worse condition of public morals than existed previously. It is the function of the State to promote and secure public order; when it passes beyond that legitimate function, and, as some fanatics would have it, proceeds to enforce moral principle, it is courting defeat of the object in view, and inviting disaster to the very principles it pretends to advance.

Two views on the question of alcohol hold the field at the present time. The vast majority of people believe that the craving for drink is artificial, that it is directly produced by the supply of alcohol, and that it is transmitted to posterity as an acquired quality. The other view, held as yet by a small school of biologists and sociologists, asserts that the craving for alcohol is innate in a certain proportion of the race, that it would continue to be transmitted should alcohol cease to exist, and that it is independent of the drinking habits of antecedents. As between the merits of two such irreconcilable groups of opinion it is the duty of every sufficiently educated man, be he lay or medical, to decide for himself. If he accepts the former, he must be prepared to advocate the somewhat discredited Lamarckian doctrine of the transmission of acquired characters. If he accepts the latter, his ethical standard, so far from deteriorating, will advance to the more rational position of regarding alcoholism as the medical profession now regards tuberculosis and cancer.

In view of what has been already stated, it is evident that the present Bill, while aiming at the further establishment of decency and public order in the community, properly recognises that the process of evolution has not yet advanced so far as to justify the State in attempting to substitute its own enactments for the greater force of natural selection.

Chapman Poisoning Case. THERE can only be one opinion in regard to the justice of the verdict in the charge of murder against Severino Klosowski *alias* George Chapman. The history of this criminal's life was described by the Solicitor-General as one of "unbridled, heartless, and cruel lust"; and it would be difficult to find, in all the annals of crime, a more atrocious story of malignant dissimulation and callous cruelty. Putting on one side, however, the sordid details of the crime, the case presents many features of scientific interest and importance, and, on this account, it will take its place amongst the most celebrated trials for poisoning which have occurred during the last century.

Amongst these, the cases of Palmer, J. P. Cook, M'Mullan, Smethurst, Winslow, and the Bravo mystery, may be recalled, while in Scotland many must still remember the trial of Dr. Pritchard, for the murder of his wife and mother-in-law. In all of these cases the poison administered, as in the present instance, was tartar emetic. It is a curious and interesting fact, that criminal poisoning by means of antimony appears to be practically confined to this country, and that abroad, in Germany for example, leading books on toxicology dismiss the subject in a few sentences, merely indicating that cases of criminal administration of tartar emetic have occurred in England.

It is not easy to explain the reason for this country's unenviable notoriety. The substance is a common drug everywhere; it is cheap, its properties are well known; and not even arsenic lends itself better to secret administration at the hands of a skilful and cunning poisoner. In this country the possibilities of tartar emetic, in the hands of a criminal who administers it in repeated small doses, have long been recognised, because, although the ordinary symptoms and post-mortem appearances produced by antimony are well known, and the detection of even the minutest quantity in the tissues of the body after death can be effected with the greatest certainty, yet, on the other hand, the poisoner is favoured by the fact that, when skilfully administered in small doses, the effects which it produces are so insidious, so liable to be ascribed to the natural effects of ordinary diseases, and thus to avert suspicion, that the chances of the crime remaining undiscovered are very considerable. The history of previous cases of poisoning by tartar emetic is a record of mistaken diagnoses, of patients suffering from unaccountable vomiting, accompanied with mysterious debility and gradual exhaustion until death supervened, and was ascribed by the medical men in attendance to dysentery, cholera, gastric fever, debility, asthenia, etc.

The learned judge in the recent trial is reported to have animadverted in strong terms upon " the sad series of misadventures —to call them nothing else—with regard to the way in which the medical men had exerted what they called their skill." While having sympathy with the medical attendants on Klosowski's victims, and with every regard for the difficulties of their position, we cannot help thinking that there was some justification for the remarks from the bench. Well-known symptoms of poisoning apparently aroused no suspicion, although the doctors were at their wits' end to account for them. The idea of ptomaine poisoning in the case of Maud Marsh does seem to have occurred, but when this view was discarded, no thought of other causes of irritant poisoning apparently arose. The removal of the patient to Guy's Hospital led to no better results; and although she was an inmate of this institution for nearly a month, the judge stated that "the doctor there appears to have taken the diagnosis from a young man who was described as a clerk, and he never had any conversation with the patient as to her previous history." It is easy to be wise and to criticise the action of others after an event, and while, no doubt, the medical profession as a whole must feel it as a reflection upon their skill, that a wretched hairdresser's assistant, with a smattering of medical knowledge, was able to carry on his nefarious practices for so long without being found out, yet we shall have less cause to regret the circumstance, if it impresses upon practitioners and hospital physicians alike, not only the importance of keeping in view the possibility of secret poisoning, but also the ease with which, in the majority of cases, such a suspicion can be confirmed by means of simple tests and the exercise of ordinary precautions.

A fact of very great interest, brought out in the evidence, was the preservative effect of antimony upon the tissues of the body, when the substance has been administered over a prolonged period. This action of antimony, as well as of arsenic, was no doubt well known previously, and is referred to in all works on toxicology. In the Pritchard case, when Mrs. Taylor's body was exhumed three weeks after burial, it was found to be practically unaltered by putrefaction; but there has never been such convincing proof of the action of metallic poisons in this respect as that supplied by Stevenson in his evidence regarding the body of the woman Spink, one of Klosowski's victims, which, although it had been buried for five years, was as fresh in appearance as if it had only been placed in its coffin that same day. It was a satisfactory feature of the case that the chain of circumstantial evidence against the prisoner was strengthened by the discovery of the presence of antimony in this latter body also; but it will be a great misfortune if the remarks which the judge made in reference to cremation, in connection with this circumstance, should be seized on by opponents of cremation as an argument for its abolition. By all means make restrictions in regard to cremation —societies in favour of it have themselves made most stringent regulations; but, as has been constantly pointed out by the medical profession, and by at least one Royal Commission, the first and most important step towards the prevention of concealed crimes is to pass a law, enacting that every dead body shall be inspected by a medical man before burial, and that the cause of death shall be ascertained by means of a post-mortem examination, if necessary. A circumstance in connection with the case, which might well receive attention from the judicial authorities of England, is the manner in which the wretched prisoner was treated before being brought to trial. He was in custody for almost four months, and during this time he was practically tried and found guilty three times—first, by the Coroner's Jury, then in the Police Court, and finally at the Old Bailey. There seemed to be something bordering on indecency, not to speak of injustice, in the long accounts published in the newspapers, under startling headings, of evidence given in the Coroner's Court one day, and in the Magistrate's Court the next, against the prisoner, who was, so far, only suspected of the crime, and who was not even upon his trial. How can the public preserve an impartial attitude or refrain from forming an adverse judgment in a case if its mind is prejudiced by the finding of a verdict of wilful murder by a coroner's jury, and is supplied in the daily press with every piece of evidence which can be obtained against the accused, before the real trial. Such procedure does not seem to us to afford that fair play to which every prisoner is entitled, before the accusation made against him is proved.

The Scottish Graduate. It is frequently stated—particularly south of the Tweed—that the Scottish graduate, for the first six months after graduation, is a mere creature of theory —the inevitable product of a system characterised by lectures from early morn till dewy eve. Those who hold this view, and they are many, are certainly sincere in their convictions, inasmuch as they usually allow that, after a three months' training in a hospital, the despised theoretical Scottish house surgeon becomes the best practical man in the long run. For this view, that our undergraduates are turned out better qualified theoretically than practically, we fear there is ample justification. How many men graduate who have never even passed a catheter, would baffle a mathematician, and it must be admitted that such a state of affairs is a manifest injustice, both to the graduate himself, and to his future clientèle, the general public.

An analysis of the given number of lectures attended in any one day by the average Scottish undergraduate, furnishes ample proof that the remarks made by the detractors of the Scottish University system are more than justified. It is no reply to these objections to state that the *University Calendar* does not recommend the particular class or classes attended by students generally. So long as professors continue to cover only four-fifths of the subject in a given course, and at the same time continue to examine their own students, so long will the iniquitous system continue of second, and even third, attendances on such subjects as midwifery, medicine, physiology, and surgery. In the Edinburgh school, particularly, it is not infrequent to find a student attending 250 lectures on midwifery, and in some cases even 300 lectures on surgery.

This baneful admixture of a hundredweight of theory with half an ounce of practice is, we believe, neither the fault of the student nor of the teacher, but rather of the Scottish system of a rigid number of lectures, be the subject what it may; but there can be very little doubt that the financiers of the universities do not object to this repeated attendance on lecture classes, for the simple reason that it brings additional grist to the mill.

That the Scottish student is over-lectured is a fact which few will venture to deny; in fact, the non-Scottish graduate openly flaunts it in our teeth. Where, therefore, does the remedy lie?

In the *first place*, we think the system of a rigid number of lectures should be abandoned in favour of some more elastic system; something, say, in the nature of that proposed reorganisation of the curriculum, which is now before the University Court. No matter how good a system may have been some fifty years ago, it does not follow that that system is now equally applicable. As a matter of fact, it is not. Many 100-lecture courses might, with advantage, be reduced, particularly anatomy and midwifery, to make way for a more practical system in the dissecting-room, and for practical midwifery and gynæcology.

Secondly, the class hours should be arranged in such a way as to make second attendances on purely scientific subjects impossible. The physiological authorities, for example, state that they do not wish students to attend a second course of physiology lectures, yet it is a notorious fact that, in spite of the authorities, students continue to do so. This could be easily and effectually nipped in the bud by transferring materia medica from 2 P.M. to 10 A.M.

Thirdly, the examinations should be made more practical.

Fourthly, all afternoon lectures of every description should be abolished. Once a student is in the hospital, he should be encouraged to remain there, and not be driven out, after an hour or two in the wards, to attend a lecture in a remote and sleep-inducing theatre, on a subject like medicine, which could be taught much more practically in the hospital itself.

Colour Test.

WE are all familiar with the fact that oftentimes the forbidden things of to-day are the desiderata of to-morrow. From recent indications it is not unlikely that such a *volte face* may be made in the matter of the testing of colour-vision for railway and marine service purposes. It is but very recently that we were all dogmatically informed that to ask the examinee to *name* the colour presented before him was to vitiate the whole principle of the test, and the only possible method which could be regarded as admissible as a means of detecting a colour-blind person, was one which depended for its efficiency solely and only upon the matching as distinguished from the naming of colours. Holmgren's test was in fact the only touchstone. Now there seems to be a revulsion of feeling or a change of wind; and we are now led by some to believe that, unless the candidate names the colours, there is no security that he is colour-sighted; that in fact—since the subject is so largely a nautical one—we have been on the wrong tack. Some of us are quite prepared to agree with the innovators, because we have found it impossible, as a practical matter, to get the most of the "suspects" to comprehend exactly what they have to do with the wools by means of which the test is carried out, and, except by supplementing the test in a way which is quite illegitimate, would have been forced to reject many a man whose colour-vision was in reality much superior to his receptivity of explanation. The candidates, too, will be much pleased if the naming system again takes the place of the Holmgren, adopted as it was by the Board of Trade at the suggestion and with the approval of the Committee of the Royal Society and of the British Medical Association, for they often complain that the tests employed have no apparent relation to their subsequent duties. "What have I to do with matching wools?" say they; "I have to say to myself, Is that light red, or is it green, and act accordingly." With this view some of us also have had much sympathy; for, though Holmgren's test may be the best means of detecting colour-blindness scientifically (though this is by many vigorously denied), it does not follow that it is the best means of ascertaining whether an engine-driver is fit for his post.

The Committee of the British Medical Association advised, it is true, that the candidate should be required to recognise and name promptly the colours used in signalling, but this part of the examination was not to take place till after the test by means of the wools, "carried out in strict accordance with Holmgren's directions," had been passed.

The truth probably is to be found between the two extreme positions, for if, as seems to have been definitely proved, a man who has a decided defect of colour-vision has yet been able triumphantly to pass the examination conducted on Holmgren's method, it is none the less certainly true that a colour-blind person may elude detection when the naming plan alone is employed. Some writers on the subject, especially among the scientists, are too much taken up with the idea of detecting what one might call "scientific" colour-blindness, even of slight degree, and are apt not to limit the examination, as it certainly ought to be limited, in such fashion as simply to aim at the examination of those whose presence would involve danger to the community.

Ear and Throat Department.

THE following changes have been made in the Ear and Throat Department of the Edinburgh Royal Infirmary:—Dr. P. M'Bride, on the expiry of his term of service, has vacated the position of Senior Surgeon, and Dr. M'Kenzie Johnstone has received promotion. The post of Assistant Surgeon has been filled by the election of Dr. Logan Turner. With the retirement of Dr. M'Bride both the Infirmary and the Edinburgh School lose the distinguished services of one who has done so much, not only for his special branch of the profession, but for the Ear and Throat Department, in which he has worked so long.

ON STREPTOCOCCUS INFECTION OF THE LUNGS.

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(PLATE XIV.)

COMPLETE records of pure streptococcus infection of the lungs and pleura are sufficiently rare to warrant the publication of the following case:—

CASE.—On 28th January, C. K., male, æt. 38, consulted a German physician abroad, regarding a pain in his left side, and was informed that he suffered from pericarditis. The pain persisting, the diagnosis was changed during the succeeding four weeks, first to pleurisy, then to pneumonia, and lastly to influenza. For the last affection he was recommended to place himself upon low diet and to undergo a course of hydropathic treatment, which advice he followed, with the result that in seventeen days he lost 22 lb. in weight. The patient grimly remarked to me, that the date upon which this treatment was begun, namely, on the 1st April, was in every way suitable for embarking upon such a course. Dissatisfied with the guidance he had been receiving, patient proceeded to London with the object of obtaining further advice. He saw a well-known consultant there, about the middle of May, who diagnosed left-sided empyema, and, notwithstanding the fact that aspiration was attended by a negative result, adhered to that diagnosis, and advised immediate operation. With the object of having this course followed out, patient went to Sheffield, where he had friends, and a surgeon was called in, who thoroughly explored the chest by aspirating it under ether. But the result again proving negative, operation was declined by the surgeon.

Notwithstanding the fact that no interference took place, improvement in general health set in. This improvement was contemporaneous with a sudden increase in the amount of sputum expectorated. Patient now went to Scotland to recruit. Much of the weight which had been lost was regained, and he became able to go about and enjoy light exercise. In July, signs of gastric catarrh led him to again seek medical advice, and he saw a Glasgow physician. As the case was not yielding to treatment, and the physical signs in the chest were considered to be suggestive of phthisis, he was advised to seek sanatorium treatment. He accordingly came under my notice on 31st July 1902. The patient was thereupon at once put to bed and a four-hourly temperature record kept. The case from the time it came under my care may be conveniently considered under three periods—(*a*) Ante-operative, lasting eighteen days; (*b*) operative, lasting two days; (*c*) post-operative, lasting forty-eight days.

(*a*) The physical signs over the left apex in front, at the beginning of this period, were as follows:—Percussion note was slightly impaired. Vocal fremitus and resistance slightly increased; the breath sounds were distinct and weak, and of vesicular type, with expiration prolonged; no râles were present. During the next fourteen days these signs were destined to undergo a very marked change. Over the lower lobe behind,

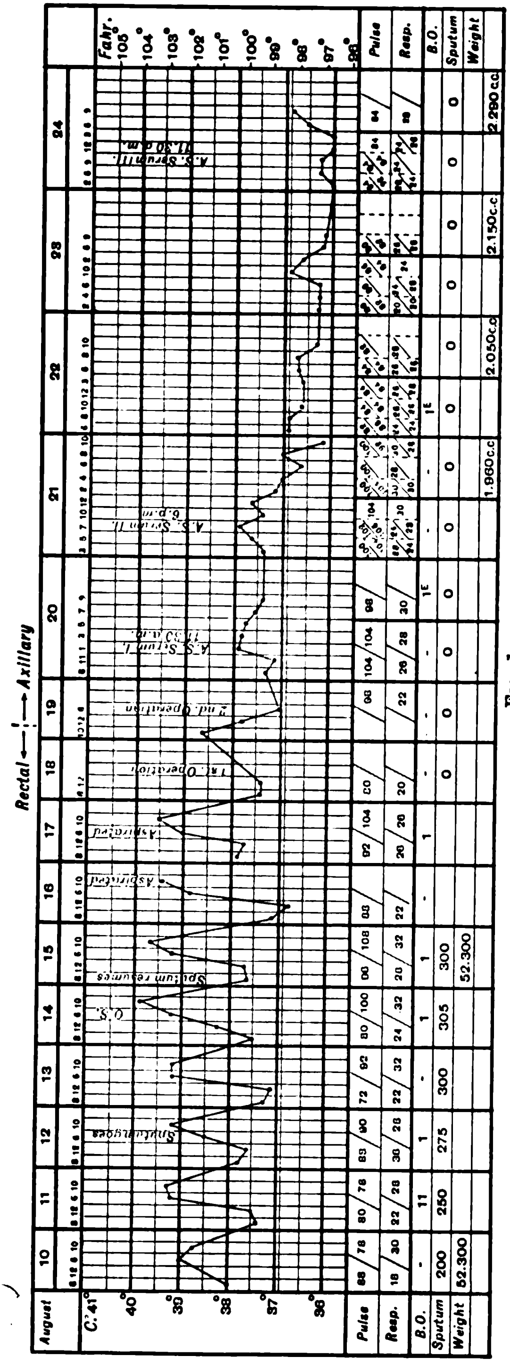

FIG. 1.

the percussion note was absolutely dull, and the breath sounds tubular. From the fifth dorsal vertebra downwards, pectoriloquy of the articulate type was well marked, vocal fremitus was diminished, and a few coarse metallic râles and an occasional rhonchus were audible. The apex beat of the heart was displaced upwards to the sixth interspace and slightly to the right. Two murmurs were heard, both of which were systolic in time—(1) Aortic, which was harsh; (2) a mitral, which was soft and blowing in character. These murmurs proved to be of great interest, and will again be referred to more fully later on. Pain over the apex was complained of as early as the fourth day, and vomiting began on the sixth day.

The cough, always troublesome, steadily increased in frequency and force. The sputum uniformly increased until, at the end of the week, it averaged about 7 oz. daily (*vide* Chart). The chart shows the temperature curve at this time to have been very irregular, of small amplitude, about 2° F., and usually highest about 6 P.M., when it sometimes reached 103° F. The rate of pulse and respiration showed a steady increase. Sweating was absent. The weight lost during these seven days amounted to 5 lb. Next week the vomiting after meals, growing steadily worse, became nearly constant. Great restlessness, sleeplessness, and tendency to wandering appeared. Under the left clavicle, tubular breathing took the place of the modified vesicular sounds already referred to, and appearances, more definitely suggestive of fluid at the base of the left lung behind, supervened. But more important than any of those points was the behaviour of the sputum, which suddenly entirely disappeared on the thirteenth, and did not reappear until the sixteenth day. On the seventeenth day I aspirated the chest, and drew a small quantity of pus; but a second attempt made by my colleague, Dr. King, next day, met with a fuller reward, and he drew a syringeful of pus. Microscopic examination of this fluid showed streptococci but no tubercle bacilli to be present. Its nature was afterwards confirmed by culture. This, then, covers the first period, the outstanding clinical features of which were the rapid change in the physical signs, the complete absence of sweating, the ingravescent nature of the vomiting and pyrexia, and above all the peculiar behaviour of the sputum.

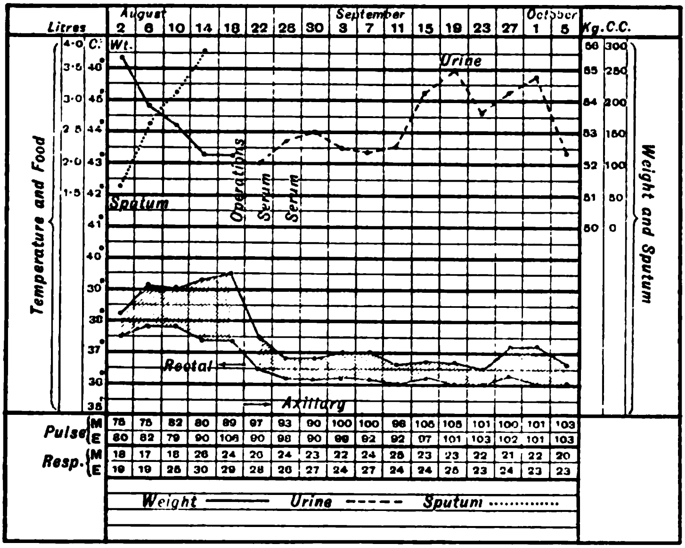

FIG. 2.

(*b*) *Operative period.*—The patient having been placed under ether, Mr. H. M. Gray resected, in the mid-axillary line, an inch and a half of the sixth and seventh ribs. A superficial abscess of the lung was at once found and incised. Its cavity was about 2 in. in diameter, and its walls rough and ragged. Two smaller abscesses were felt in the neighbourhood, and opened through the larger one. As the oozing was fairly free, gauze was packed into the cavity around a large drainage tube. Whilst the patient was still under ether an exploring needle was inserted into the first interspace on the left side, when pus was at once obtained. Pus was also obtained through a puncture made in the third interspace in the mid-axillary line. Drainage in this area was obviously indicated. As, however, the patient's condition was considered such as to render further operative interference at that juncture a matter of considerable danger, it was postponed. Next day, however, under gas and ether, part of the sixth rib was resected in the axilla, and entrance thus gained to a flat shallow empyæmic cavity, which stretched upwards and forwards to the infra-clavicular region where pus had been found on the previous day. The incision made along the axis of the sixth rib, in the anterior axillary line, struck the lower limit of the empyema. Two more abscesses were discovered in the apex of the upper lobe of the lung, and opened by blunt force. All the remaining lung tissue felt quite soft. No resistant feeling, such as the abscesses had conveyed to the finger, was present. The pleural tissues lining the great fissure of the lung formed a tough fibrous septum, which separated the upper set of abscesses from the lower set, and this was left intact. A large tube was inserted into the empyema cavity, and gauze packed into the abscess cavities around drainage tubes. This represents the second period.

We now come to the third or post-operative period—

(*c*) *Post-operative.*—The principal *surgical* points noted during this period were as follow :—The packing of gauze with iodoform emulsion was cautiously removed from the cavities, on the second day after the later operation. The wound was swabbed out and the dressing replaced. Next day the wounds were again dressed, and this time they were carefully syringed out with a small amount of 2 per cent. peroxide of hydrogen. The amount used at first was very small (about ½ drm.), as we were uncertain whether or not the fluid might pass over viâ the bronchi to the sound side and set up violent coughing. However, no such tendency appeared, so, as time went on and confidence was gained, we used larger and larger quantities of fluid, until we were satisfied that the whole areas were being thoroughly washed out. This was done by using about 1½ oz. of weak boric acid solution, and then, when the solution came away clear, injecting 1 oz. of 2 per cent. peroxide of hydrogen into each cavity.

On the sixteenth day it was observed that a communication had become established in the lung between the upper and lower cavities. This was welcomed, as it enabled us, by injecting all the fluid through the superior opening, to provide more thorough drainage for the lower portion of the upper and the upper portion of the lower cavity than had before been possible. Its beneficial effect was soon observed upon the patient, whose general condition at once improved, and it now became possible for him to sit up in bed for a short time daily. This channel became blocked two days afterwards, and remained so for forty-eight hours, and its prejudicial influence was at once manifested by a rise of temperature which immediately took place. However, the channel again became patent on the twentieth day, and remained so permanently. At this stage a laryngoscopic mirror, with electric head-lamp, was used to inspect the interior of the cavity through the upper wound. It appeared to be quite healthy, looked clean, and some vessels were seen in its walls.

Meanwhile, steady contraction of both cavities had been taking place,

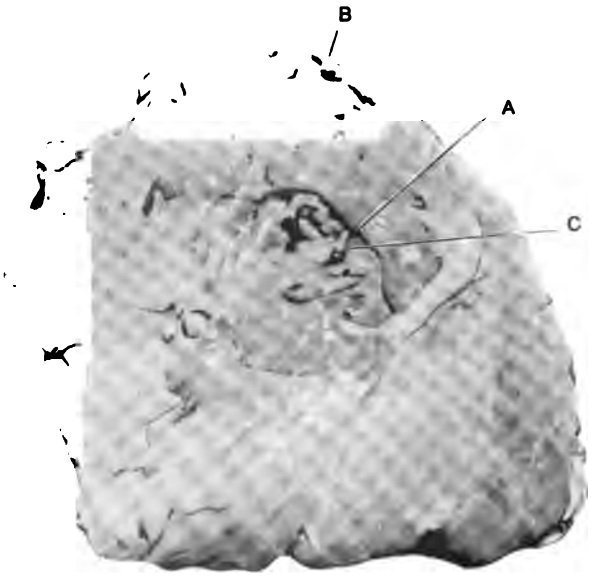

FIG. 1.—Showing surface view, left lung.

A—Point at which upper abscess drained into lower abscess.
B—Site of upper abscess and empyema.
C—Lower abscess cavity.

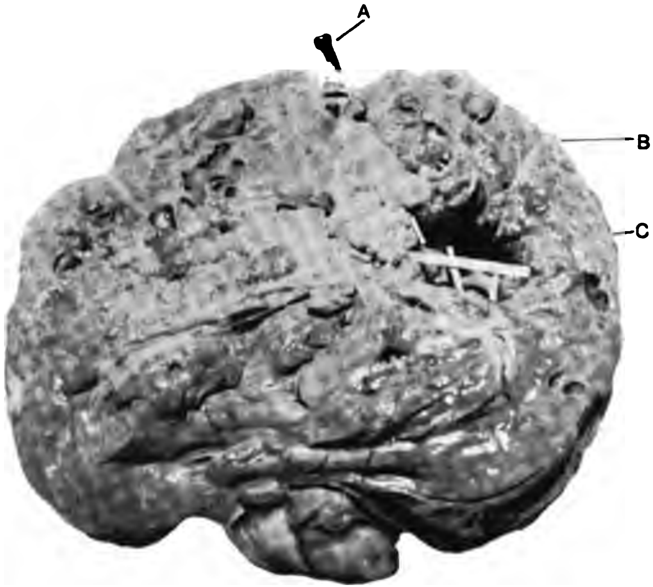

FIG. 2.—Vertical section of left lung (from left to right).

A—Seton passing from left bronchus to abscess cavity which was not found in life.
B—Site of abscess (upper) relieved by 2nd operation.
C—Site of abscess (lower) relieved by 1st operation.

so that by the twenty-eighth day it was found that the lower cavity had become practically obliterated. The opening in the chest wall was maintained by placing a tube in it. This was done in the interest of the upper cavity.

At this time, Condy fluid dressing was substituted for peroxide, with no particular result, but abandoned for peroxide of hydrogen again a week afterwards. By the thirty-first day it was found, by internal measurement, that the upper cavity had contracted from above downward to the extent of 2¼ in.

On the fortieth day, in view of the general condition of the patient, which by this time had become very poor, and of the comparative dryness of the lesions, it was decided to substitute dry for moist dressings. The cavity was therefore stuffed with gauze. On the forty-third day a significant fall in temperature to 97° F. took place, and it remained there for three days, when it slightly rose again immediately before the end. The patient died from exhaustion on the forty-eighth day after operation.

From a more strictly *medical* point of view the following are the chief features of this period, succeeding operation:—(1) The sputum instantly disappeared and never returned. (2) Complete disappearance of vomiting and mental distress took place. (3) Rapid fall of temperature towards normal occurred, as may be seen by referring to the chart. (4) Exocardiac origin of apical cardiac murmur became recognisable.

Some of the pus obtained at the time of the operation was examined microscopically, and as it appeared to be purely streptococcal, it was decided to employ antistreptococcus serum. This was done, on the ground that the large amount of poison having been removed by operation, there was good reason for expecting that antistreptococcus serum would operate by largely lessening the mischief produced by the remainder of the poison. Accordingly, 10 c.c. of antistreptococcus serum was injected on the first, third, fifth, and seventh days respectively—four injections in all. During this period the temperature reached that low level which it afterwards continued to maintain. Thus no particular effect of the serum, either local or general, was noted. Sweating remained throughout practically absent.

During the first four weeks after the operation the patient seemed to slightly more than hold his own, and improved somewhat, although never to that extent that he could be moved out of bed. We were thus unable to ascertain whether or not he ever gained in weight.

POST-MORTEM.—*Right lung* showed no sign of phthisis. It was slightly enlarged, and weighed 520 grms. Section showed it to be generally congested and emphysematous, especially at apex and free border. There was some pigmentation present. The right glands were enlarged and pigmented. Right pleura showed no adhesions nor fluid.

Left lung.—The operation cavities were both almost obliterated, and presented a healthy granulating surface. The pleura was adherent all over the front and base of chest, also to the diaphragm and to the pericardium and great vessels. In what remained of the pleural cavity, high up, about 2 oz. of pus was found. The lobes were firmly adherent to each other. The lung was firm and fibrous all over from apex to base, except at the extreme lower edge all round. Pericardium was adherent.

Section as shown (Plate XIV.) was tough in cutting, and studded throughout from apex to base with multiple small abscesses in great numbers. Near the root of the lung, and occupying the upper part of the lower lobe, the lung tissue was broken down into one large abscess cavity, with many trabeculæ running across it. This was the abscess which was not reached by operation. The walls of the bronchi, especially the medium-sized ones, were very thick and slightly calcareous in parts; weight, 1050 grms.

Heart weighed 285 grms., showed brown atrophy with calcareous aortic cusps (systolic aortic).

Spleen weighed 220 grms.—chronic venous congestion.

Kidney weighed (left), 250 grms, pale cortex; (right), 230 grms. —chronic venous congestion.

General Considerations.—1. In passing, may I draw the attention of those who believe in recommending low diet and hydropathic measures of treatment in pyrexial cases to its effect in this one. Here at least that line of treatment failed to reduce temperature or to improve the general condition of the patient. After having submitted himself for seventeen days to such a course, the patient found he had lost 22 lb. in weight, and moreover felt profoundly ill.

2. *Sputum.*—In view of the presence of impaired percussion note, increased vocal fremitus, and vocal resonance, tubular breathing and medium râles at the apex of the left lung, *one might confidently have anticipated the discovery of tubercle bacilli in the sputum.* In this, however, we were disappointed. The sputum contained pus cells and streptococci in large numbers, but no tubercle bacilli. Even more interesting than its bacteriology is a consideration of the behaviour of the sputum itself. On one occasion it suddenly increased by several ounces in the month of June, when the patient was in Sheffield. Its appearance in large amount was the herald of a delusive improvement in the general health, which then set in and lasted for two months. Doubtless, at that time the abscess cavity had secured for its contents a means of exit through a bronchus, which exit at a later date became again cut off. Relieved of the toxæmia consequent upon the absorption of hitherto pent-up pus, the patient's health improved. This no doubt explained the temporary convalescence of June and July, which enabled the patient to come to Scotland to recruit. *Twice in the course of the disease the sputum suddenly and completely disappeared*—once temporarily and once permanently. Six days before operation, the expectoration, which for some days previously averaged 7 oz. daily, suddenly disappeared; nor did it reappear till three days had elapsed. What, it might be asked, was the explanation of this phenomenon? At the time, I believed that a pulmonary abscess, which up till that point had been evacuating itself through a bronchus and per mouth, had burst into the pleural cavity, and had continued emptying itself in that way.

until it reached that level where the pleural cavity was limited by adhesions. Its exit in that direction having been cut off by the filling of all the available pleural space, the pus was again obliged to requisition its old line of escape by the bronchus. This it did three days afterwards, when the expectoration per mouth was resumed. This view I held until the appearances found at the time of operation, and afterwards confirmed by post-mortem examination, showed it to be untenable; for then it was discovered that the lower portion of the pleural sac, and that corresponding to the lower lung lesion, was entirely obliterated.

Although I must admit it does not seem to be an adequate one, I cannot suggest a better explanation of this extremely interesting clinical feature, than that it was caused by the sudden impaction of a caseous mass in the bronchus leading from the abscess cavity.

The second and permanent disappearance of expectoration took place coincidently with the first operation. At this time two new factors were introduced. In the first place, air was admitted into the pleural cavity, several of the muscles of inspiration were severed, and the lung was largely collapsed. In the second place, a free opening into the abscess cavities through the chest wall had been made, through which it was possible for pus to drain away freely. Whilst the latter is a very obvious explanation, in view of the post-mortem appearances of the lung, I do not think it can be accepted as the true one; for then we found the main left bronchus opening blindly into a large abscess at the root of the lung, which appeared to have no connection whatever with those which had been relieved by operation. I am thus disposed to adopt the view that the permanent disappearance of the discharge through the mouth was dependent upon the operation which had been performed, only in so far as the operation, by admitting air into the pleural cavity, rendered the ordinary process of forced expectoration from the left side, for the time being at least, impossible.

3. *Exocardial murmur.*—As already mentioned, the nature of the apical murmur was first recognised on the thirty-first day after the operation. The murmur was best heard in S_3 and S_4 and near D_4 behind. It was systolic in time, localised, and, unlike an ordinary mitral murmur, could not be traced into the axilla. That the murmur was due to compression of the air contained in the pulmonary cavity by the cardiac systole, and not to any purely cardiac factor, seemed to me to be clearly demonstrated; for when I caused the cavity to be obliterated, by filling it through the chest opening with a quantity of weak boric solution, the murmur disappeared. And when again that fluid was allowed to escape through the wound, and the air to re-enter the cavity, the murmur again became audible. The value of the presence of an exocardial murmur, as an aid to diagnosis in the case of suspected

lung cavity, has long been recognised. But I have not heard, nor have I been able to find in my reading, any record of such a proceeding as the above, where the exocardial origin of the cardiac murmur has been clearly and indubitably established.

4. For the interest of surgeons, I refer to the fact that I found inspection of the cavity in the apex of the left lung through the upper wound, by laryngoscopic mirror and small electric headlamp, quite practicable.

5. In regard to physical signs, it may be mentioned that œdema of the chest wall was clearly demonstrated by pressure of the stethoscope over its lower one-third behind. Secondly, that the breath sounds over the lower one-third of the chest never became entirely occluded. They were faintly heard and gave an impression of distance—the type was bronchial, approaching tubular. Immediately before operation, the sound heard under the left clavicle was loudly tubular. This is interesting, in view of the fact that the operation showed that there must at that time have been a localised empyema containing several ounces of pus, interposed between the chest wall and the lung itself. In this case the fluid seemed rather to conduct than to impair the conduction of the bronchial sounds through the chest wall.

The almost *complete absence of sweating* in this case is noteworthy. I may say it characterised another streptococcal lung abscess case which recently came under my observation. It is contrary to my experience of tuberculosis cases, where the temperature curve resembles that which this case presented during the week prior to operation, to find sweating absent. Indeed, in such tuberculous cases, sweating is, as a rule, one of the outstanding clinical signs. It is a point, I believe, of some importance, where there is difficulty in deciding whether the case is one of tuberculous or of streptococcal infection. Notwithstanding the fatal issue which attended this case, I believe the proper course was followed when the chest was opened .In so far as the operations were concerned, they were completely successful, and did all that they were intended to do, namely, to relieve the pus whose presence had been recognised, and to promote the recovery of the lung in the adjacent area. The large abscess which no doubt accounted for death, and was found on post-mortem examination, could not have been diagnosed in life, nor could it have been interfered with even had its presence been known. My view, on the wisdom of operating in such cases, is fortified by my experience in the other case already alluded to. In that case the surgeon, on aspirating, failed to find the pus which the physician had localised a few days before. He therefore declined to operate. The patient died about three weeks afterwards, with all the symptoms of perforation of the diaphragm.

I wish to acknowledge valuable assistance which I received in connection with this case from Drs. D. B. King and H. H. Roberts.

RETINAL HÆMORRHAGES AS A DIAGNOSTIC FEATURE IN FRACTURE OF THE BASE OF THE SKULL AND IN SUBARACHNOID HÆMORRHAGE.

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(Plate XV.)

It is impossible to discuss the subject of this paper without referring briefly to the anatomy of the optic nerve, its sheaths, and the subarachnoid space, so far as it concerns the matter in hand.

The optic nerve is a prolongation of the white substance of the brain, and the bundles of nerve fibres are surrounded by strong trabeculæ of fibrous tissue, which extend into it from the pial sheath. The region of the papilla is of interest, because in front of the lamina cribrosa there is a distinct constriction of the optic nerve. The optic nerve obtains part of its blood supply by vessels which enter it from the pial sheath, and course upwards in the trabeculæ. The central artery of the retina enters the optic nerve about 10 mm. behind the bulb, passes at once to the centre of the nerve, and runs straight out to the disc. It gives off a few branches to the trabeculæ of the nerve on its way.

The region of the papilla is supplied by the pial sheath vessels, by branches of the central artery of the retina, by a few branches from the choroidal vessels, and by a zone of short posterior ciliary arteries. All these vessels in the nerve and in the pial sheath possess a proportionately enormous perivascular network of lymphatics, which freely communicate with the intersheath space. The circulation in the retina is a closed system, excepting for an anastomosis with the vessels which supply the papilla. It should be added that there is a considerable network of lymph spaces between the fibres of the trabeculæ, the fibres of the pial sheath, and the fibres of the sclerotic coat of the eyeball; and that all these lymph spaces appear to communicate freely with the intersheath space.

The sheaths of the optic nerve demand a word of description. The pial sheath, continuous with the pia of the brain, is very closely applied to the optic nerve, because from it the strong trabeculæ are given off which penetrate the nerve. The dural sheath, which is the outer wall of the intersheath space, is a continuation of the dura mater of the brain, and both it and the pial sheath terminate in the sclerotic coat of the eyeball. The intersheath space is divided somewhat incompletely by the arachnoid sheath, which is a continuation of the arachnoid matter. It is usually described as being closely applied to the dural sheath, and connected with it by numerous trabeculæ, which cross the subdural space.

From a careful study of a large number of optic nerves, I am convinced that the arachnoid is more closely related to the pial sheath until at about 5 mm. from the bulb, where it is applied to the dural sheath, and to which it is connected, as above described, by strong trabeculæ, which unite the membranes together. The arachnoid terminates in the sclerotic, near the termination of the dural sheath.

The subarachnoid space belonging to the brain is of considerable capacity, as the membrane does not dip into the fissures; and, in addition, it contains several large cisterns or sinuses, with one of which this paper is specially interested. The sinus subarachnoidalis basalis is formed by the arachnoid stretching over the corpora albicantia, and being attached to the chiasma optica. Laterally, the membrane is closely applied to the crura cerebri; and the space so roofed in by the arachnoid is of considerable size. There is no median raphé, but the stalk of the pituitary body must help to divide the space into two halves, at least anteriorly.

I found, on examining the eyes of persons who had died of fracture of the base of the skull, from which cause, directly or by contre-coup, there had been a great amount of subarachnoid hæmorrhage, that retinal hæmorrhages were common—in fact, I might almost say the rule, as the summary of my cases appears to demonstrate. But, further, I noted that where the subarachnoid hæmorrhage was unilateral, the retinal hæmorrhages were generally limited, but not invariably to the same side. The hæmorrhages in the retina were usually massive, or of irregular outline, and were situated at some distance from the optic disc.

In fractures of the base, the diagnosis is by no means always easy. In fractures involving the anterior fossa of the skull there is often bleeding or escape of cerebro-spinal fluid from the nose, or discoloration in the neighbourhood of one or both eyes, due to extravasation about the sphenoidal fissure. Where the fracture extends to the petrous part of the temporal bone, bleeding or escape of cerebro-spinal fluid may be noted from the ear of the affected side. But where, on the other hand, the posterior fossa is the site of fracture, the diagnostic phenomena are very uncertain; although discoloration behind the mastoid, and sometimes a more diffuse discoloration in the neck, may be noted. The recognition of retinal hæmorrhages is easy, even to the comparatively inexperienced ophthalmoscopist, and the importance of these hæmorrhages can be best realised by a study of the cases given below. I ought to state that where the subarachnoid hæmorrhage comes on gradually, no retinal hæmorrhages are produced. It is well known, for instance, that retinal hæmorrhages are not a necessary result of the great but gradually increasing pressure, such as may occur in cerebral tumour, internal or external hydrocephalus, etc.

I have examined the eyes and optic nerves in a considerable number of cases of fracture of the skull, but have only selected twelve cases, all of which show fracture of the base, excepting one case, in which there was a fracture of the squamous part of one temporal bone. I have divided these cases into three groups.

GROUP I. contains five cases of fracture of the skull, in which the subarachnoid hæmorrhage was mostly unilateral, and retinal hæmorrhages were present but confined to the eye on the same side. All of these were cases of fracture of the base, excepting one, which was a fracture of the squamous portion of one temporal bone. In that particular case the fracture was on the left side, and the subarachnoid effusion on the right.

GROUP II. contains two cases of fracture of the base, in which the hæmorrhage was almost equally marked on both sides, and in which there were retinal hæmorrhages in both eyes.

GROUP III. contains five cases of fracture of the base, in which there were no retinal hæmorrhages visible to the eye after death. In all these cases, with two exceptions, there was little subarachnoid effusion, or an effusion of apparently slow onset, and in one of these pressure seems to have interfered with the passage of blood into the intersheath spaces of the optic nerves.

Naturally anxious to exclude any fallacy as to the retinal hæmorrhages being the result of the concussion, or the asphyxia, or other abnormal condition which might be associated with fracture of the skull, I determined to examine a number of cases of subarachnoid hæmorrhage which were not dependent on a preceding fracture, and selected a little group of four cases, in all of which subarachnoid hæmorrhage was present, and I found in three out of the four that there were retinal hæmorrhages; in one they were present in both eyes, in the other two cases in one eye only, and confined to the side of the chief subarachnoid effusion alone. The first case was one of pontine hæmorrhage, in which the blood had burst externally, filling the sinus basalis and both intersheath spaces with blood, and causing numerous retinal hæmorrhages. The other two cases were originally ordinary cases of cerebral hæmorrhage, which had, however, burst externally, and so had given rise to subarachnoid effusion more markedly on one side, and the retinal hæmorrhages present were confined to the eye of the affected side alone. The fourth case of this group was also an ordinary case of cerebral hæmorrhage, which had almost ruptured into the ventricle, but only a very small amount of blood was found in the subarachnoid space, and it was in reality mostly blood-stained lymph. In this case there were no retinal hæmorrhages.

Before discussing the significance of these retinal hæmorrhages, or offering any explanation, I give a brief note of the cases under their respective groups.

GROUP I.—*Cases of fracture of the skull, in which the subarachnoid hæmorrhage was unilateral and the retinal hæmorrhages were confined to that side alone.*

CASE 1.—Female, æt. 39.—History of fall down a stair, and was admitted unconscious to hospital, where death occurred in a few hours.

Post-mortem examination.—There was bruising over both arms and also trunk. There is a wound on the scalp 4 in. behind and 2½ in. above the right external auditory meatus. The wound exposed the bone, but no fracture could be made out on probing. There was marked flattening on the left side of the brain, and extensive subdural hæmorrhage over the right side, covering the whole cerebral hemisphere. There was also much subarachnoid hæmorrhage, especially over the right inferior frontal and inferior temporo-sphenoidal convolutions, where there was also much superficial laceration of brain substance. There was a little laceration of the left inferior frontal convolution, but very little subarachnoid effusion. A very extensive fracture was found running from near the occipital protuberance in a curved line, commencing by following the right occipito-temporal suture to the petrous part of the temporal, and thence through the foramen ovale and foramen rotundum, to end in the spheno-maxillary fissure. There is a very marked hæmorrhagic effusion into the right intersheath space, associated with several small retinal hæmorrhages, while the left intersheath space contains very few red blood corpuscles, and there is much less distension of the sheath space. There are no retinal hæmorrhages in the left eye.

CASE. 2.—Male, æt. 29.—Death probably within twelve hours of the accident; patient being found unconscious at the bottom of a common stair.

Post-mortem examination.—There were many bruises over the body, and extensive extravasation of blood under the scalp at the back of the head. No blood was oozing from the nose or ears. Upon opening the skull, the dura was much distended, especially over the right hemisphere, where there is a large subdural hæmorrhage, and there is a large effusion of blood at the base. The left hemisphere is markedly flattened. There is extensive subarachnoid hæmorrhage over the greater part of the right hemisphere, and considerable laceration of the brain substance, especially of the right inferior temporo-sphenoidal and also the right supramarginal and angular convolutions. No other lesion of the brain was present. There was an extensive fracture of the skull, running from about 2 in. to the left and above the occipital protuberance to about the middle of the left lateral sinus, and a second fracture ran from the same point outwards to the right, to terminate just at the petrous part of the temporal bone. The dura was torn, and most of the hæmorrhage had occurred from the division of a large branch of one of the right middle meningeal arteries. The intersheath space of the right eye is distended with blood, and there are numerous recent and fairly large hæmorrhages in the retina of the right eye. The intersheath space of the left eye contained very little blood, with much less distension, and there was only one very minute retinal hæmorrhage, so minute that I have ventured to include the case under this group. At the apex of the intersheath space of the right eye there is a large amount of recently effused blood, and it has made its way into the lymph spaces between the strands of fibrous tissue of the sclerotic, and has almost reached the choroid coat of the eyeball.

CASE 3.—Female, æt. 49.—No history obtainable. There was a large extradural hæmorrhage on the left side between the dura mater and the squamous portion of the left temporal bone running into the spheno-maxillary fissure. A branch of the left middle meningeal artery had been injured, and the clot, which was over an inch in thickness, pressed firmly upon and had deeply indented the middle and inferior temporo-sphenoidal convolutions. On the opposite side of the brain there was marked laceration of the inferior and middle temporo-sphenoidal convolutions, and also of an area of brain measuring about ½ in. in diameter in the region of Broca's convolution on the right side. Associated with these lacerations there was a small amount of subarachnoid hæmorrhage, which was, however, more extensive over the inferior temporo-sphenoidal convolution.

There was no hæmorrhage into the left intersheath space (because there was no subarachnoid hæmorrhage on that side),while on the right side there was marked hæmorrhagic effusion into the space, and two small retinal hæmorrhages were found in the right eye.

CASE 4.—Male, æt. 40.—No history. There was an extravasation of blood under the scalp, over the region of the occiput. There was a large subdural hæmorrhage, appearing as a recent blood clot over the entire surface of the left hemisphere. The cerebral convolutions were much flattened over the vertex of both hemispheres of the cerebrum. There is much subarachnoid hæmorrhage over the left temporo-sphenoidal convolutions, and laceration of the under surface of the temporo-sphenoidal and frontal lobes. The fracture is a linear one, 4 in. in length, and runs through the middle of the occipital bone, terminating in the foramen magnum about its middle point. There was extensive hæmorrhage into the intersheath space of the left optic nerve, with numerous retinal hæmorrhages associated. There was little hæmorrhage into the right intersheath space, and no retinal hæmorrhages.

CASE 5.—Male, æt. 45, was admitted to the Royal Infirmary, suffering from the effects of a fall down about ten steps into a stone area. Death ensued about nine days afterwards. At the post-mortem examination there was a large extravasation of blood under the scalp, just above the occipital prominence. A fracture was found running across the right posterior fossa of the skull, but not involving the petrous part of the temporal bone. The dura was slightly torn, but there was very little hæmorrhage into the subdural space. The most of the subarachnoid hæmorrhage was over the left temporo-sphenoidal lobe, and especially on its under surface, but involving also the under surface of the left frontal lobe. There was also some laceration of the cortex over the anterior part of the inferior temporo-sphenoidal lobe. The sinus basalis was full of blood. There was much post-bulbar swelling, and many retinal hæmorrhages in the left eye, while the right eye showed much less post-bulbar swelling and no hæmorrhages visible to the naked eye. The post-bulbar swelling on the left side was almost pure blood, or rather blood clot which had begun to organise, and in connection with this there was distinct evidence of commencing optic neuritis. The retinal hæmorrhages were, however, much more numerous than could possibly be explained by the early inflammatory change at the papilla. The effusion into the right intersheath space was, in part, serous exudation, and contained less blood. It was impossible to exclude the existence of minute hæmorrhages in the retina of this eye, and of course it is always conceivable that the existing hæmorrhages, at the time of the accident, may have disappeared; but the difference between the appearances on the two sides seems to me to be sufficient to have rendered a diagnosis of subarachnoid hæmorrhage certain.

GROUP II.—*Cases of fracture of the base, in which there was bilateral subarachnoid hæmorrhage with retinal hæmorrhage in both eyes.*

CASE 1.—Male, æt. 67.—No history of accident, but death within a few hours of admission to hospital. There was an extensive subarachnoid hæmorrhage over the under surface of both temporo-sphenoidal and left frontal lobes, and slight laceration of brain substance in the same regions. The vessels, at the base, were atheromatous. The fracture was an extremely extensive one, commencing to the right side of the torcular, extending in an S-shaped curve across the left posterior fossa, over the petrous part of the temporal bone, and ending near the left sphenoidal fissure. The straight sinus and left lateral sinus were torn to a slight extent. Both intersheath spaces were distended with blood, and there was great bulging of the space immediately behind the eyeballs, and associated with the condition were numerous retinal hæmorrhages in both eyes. There was much extravasation of blood into the tissues of the left orbit, and there were also several small pontine hæmorrhages.

CASE 2.—Male, æt. about 25, was found unconscious at the bottom of a stair. There was a scalp wound posteriorly over the region of the occiput, and considerable bruising around the wound, and extensive hæmorrhage under the scalp posteriorly, laterally, and over the left frontal eminence. The scalp wound is just at the point from which the fractures radiate. There was extensive subarachnoid and subdural hæmorrhage over especially the right temporo-sphenoidal and right occipital lobe, and much blood was found at the base of the brain, but especially over the right side. The chief fracture of the skull commences above the torcular, and extends downwards and forwards into the left posterior lacerated foramen of the left side. Another limb of the fracture passes from the same point of origin, transversely outwards across the parietal bone, and just stops short of the middle meningeal artery. From the same starting-point another fracture passes across the middle line, parallel to the last fracture, and then turns forwards and downwards, splitting into two for a short distance, then proceeding outwards along the upper limit of the right posterior fossa, above the groove for the lateral sinus, and then across the petrous part of the temporal bone. There was great distension of the right intersheath space, and the blood had passed along the lymph spaces at the apex of the space into the sclerotic, and almost reached the retina. There were also numerous small retinal hæmorrhages, mostly at some distance from the optic disc. Numerous hæmorrhages were present into the spaces between the fibres of the pial sheath. The left intersheath space was distended, although hardly to the same extent, and there were one or two minute retinal hæmorrhages at a considerable distance from the optic disc.

GROUP III.—*This group contains those cases in which there was a fracture of the base, but without any retinal hæmorrhages being present.*

CASE 1.—Male, æt. 50.—Seventeen days before death he fell 25 ft. from a chimney-stalk, striking his head against a scaffold on the way down. Fragments of bone were removed at the operation from the inner table of skull, where there was a depressed fracture. The brain matter protruded, erysipelas developed some ten days later, and death occurred. At the post-mortem, the pericranium was thickened and congested over the anterior end of the sagittal suture, and over the squamous portion of the right temporal bone. In front of the coronal suture, in the middle line, and extending more to the right than left, is an irregularly ovoid aperture from which the depressed fragments of bone have been removed, and which has been enlarged anteriorly. The diploë of the bones is infiltrated with pus. From the opening a fissured fracture runs to the right, and slightly backwards, to meet the coronal suture, and then proceeds downwards into the zygomatic fossa, and, for a short distance, into the middle fossa of the skull. There has been a little hæmorrhage from the middle meningeal artery. A smaller fracture runs from the middle of the posterior edge of the opening in the skull, backwards and inwards to the sagittal suture at the junction of its middle and anterior one-third. The opening in the dura mater corresponds to that in the skull, and the brain protrudes. There is suppurative pachymeningitis over the frontal region, being more extensive on the left side. The purulent lymph appears to be mostly superficial to the arachnoid, but a small amount of slightly turbid lymph is present in the subarachnoid space. There was some post-bulbar swelling in the intersheath space, especially of the left eye. There were no retinal hæmorrhages, and there were few cellular elements, and practically no red blood corpuscles in the scanty exudation in the sheath space. It was evident that, in this case, little blood had been effused, and there were no remains even of retinal hæmorrhages.

CASE 2.—Male, æt. 22.—History of a fall from a ladder, 20 ft. high, five days before death. About 2 in. above the left ear there is a scalp wound which has been stitched; the wound is 2½ in. in length. The left side of the face is bruised, and there is a small wound in the left cheek. There are slight abrasions on the left side of the neck, and on the left arm and leg. Some blood-stained wool plugged the left ear, and there was extensive hæmorrhage under posterior part of scalp. An extensive fracture runs transversely, almost in the line of the fronto-parietal suture; it runs slightly forwards on the right side, to end at the great wing of the sphenoid; while on the left side it runs across the petrous part of the temporal bone, to end near the optic foramen. The bones are separated in the centre of the skull by about ⅛ in. There is a considerable amount of blood clot between the dura and skull, mainly towards the left side, and the clot has begun to organise. There has been an inflammatory deposition of lymph on the outer surface of the dura from infection through the wound, and on opening the dura a similar inflammatory deposit was found on its inner surface. There was an extensive subarachnoid effusion of blood, but very limited in amount, and some purulent subarachnoid effusion corresponding to the line of the fracture. The outer surfaces of the middle and inferior temporo-sphenoidal lobes were somewhat lacerated. There was very little blood in the intersheath spaces, and there were no retinal hæmorrhages.

Case 3.—Male, æt. 75.—Was admitted to the Royal Infirmary with a depressed fracture of the left parietal bone. There was a certain amount of subdural, and a good deal of extradural, hæmorrhage, with slight laceration of the left temporo-sphenoidal lobe. In this case there was little effused blood near the base, and very slight and extremely localised subarachnoid hæmorrhage. Both eyes were examined carefully for hæmorrhages, but the retinæ were healthy. There was very slight post-bulbar swelling, and the intersheath space contained very few red blood corpuscles. Near the apex of the space of the left eye, there were some red blood corpuscles which had begun to invade the lymph spaces of the sclerotic.

Case 4.—Male, æt. 53.—Was admitted to the Royal Infirmary with severe injuries, resulting from a fall of 30 ft. There was apparently a fracture of the skull in the middle fossa, the diagnosis being aided by bleeding from the right ear. There was a fracture of the pelvis, and the man died, twelve hours later, from shock. At the post-mortem an extensive fracture was found, running from about 1 in. above the occipital protuberance across the lateral sinus and the petrous part of the right temporal bone, and ending in the right foramen ovale, and a second fracture runs upwards from the first at the part where it crosses the lateral sinus, near the junction of the wing of the sphenoid and frontal bones. There is most extensive subarachnoid hæmorrhage, although not large in amount, over both cerebral hemispheres, the cerebellum, and specially over the anterior parts of both frontal lobes. The right inferior temporo-sphenoidal convolution, especially posteriorly, shows some laceration. There is a considerable amount of cerebro-spinal fluid in both lateral ventricles. The brain, otherwise, is fairly normal, and there are no other hæmorrhages in pons or elsewhere. There is very slight post-bulbar swelling, limited to the left eye, and there are no retinal hæmorrhages in either eye. Only a very few red cells were found in the intersheath space of the left eye, while there are practically none at all in the right. Both optic nerves show the limited atrophy found in cases of homonymous hemianopsia, but it is difficult to ascribe the want of retinal hæmorrhages to this fact. The swelling behind the left eyeball is mostly serous in nature. It seems more likely that, in this case, the hæmorrhage had been of gradual development, although this is hypothetical and is not borne out by any condition noted, excepting the very small amount of blood in the subarachnoid space.

Case 5.—Male, æt. 64.—Died soon after admission to hospital, suffering from the effects of a severe fall. The head showed extensive extravasation of blood under the scalp, in the region just above but close to the occipital protuberance. There was a large amount of blood, both extra- and subdural, over the occipital region and under the tentorium

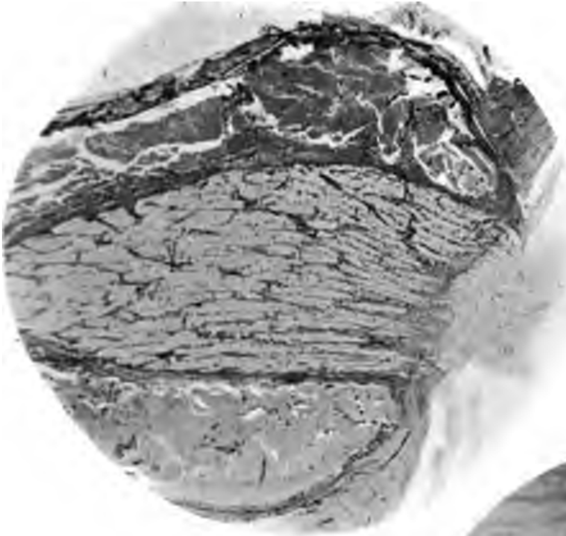

FIG. 1.

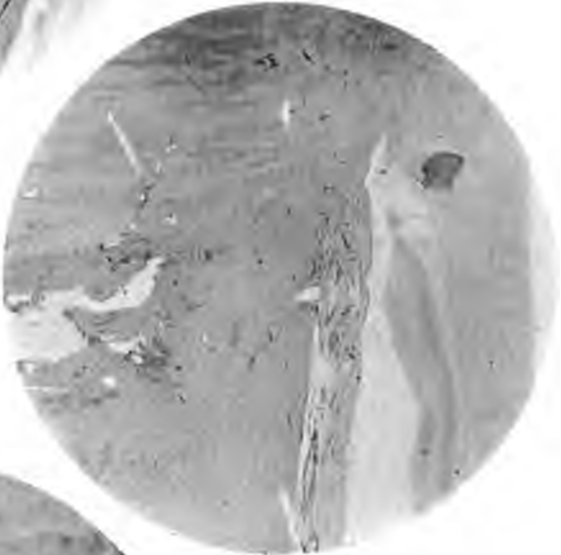

FIG. 2.

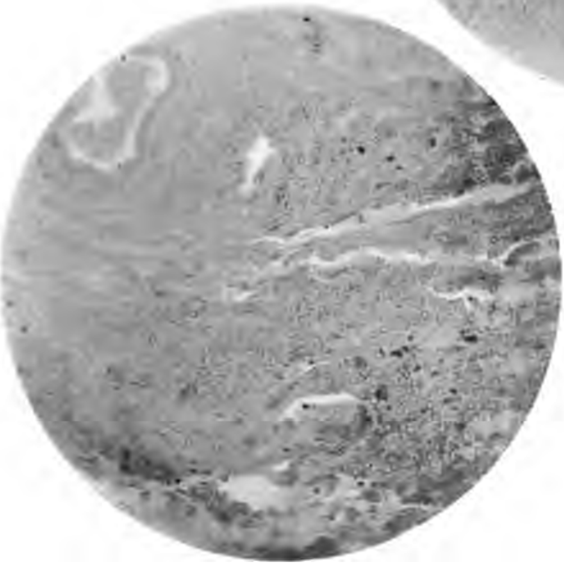

FIG. 3.

cerebelli. There is a very extensive fracture running from the occipito-parietal suture downwards, almost in the middle line, towards the right internal auditory meatus, and ending in the suture between the petrous part of the temporal and the sphenoid bones. A second fracture runs at right angles to the last, but is really only a fissuring of the inner table of the skull. The dura along the line of the first fracture is torn, and the lateral sinus has been opened into. The brain shows very extensive laceration over the left lateral lobe of the cerebellum, the right frontal lobe, and, to a less extent, the right temporo-sphenoidal lobe anteriorly near the tip of the uncinate convolution. There was diffuse, but not great, subarachnoid hæmorrhage, and slight general flattening of the cerebral convolutions. On examining, with special attention, the base of the brain and the neighbourhood of the sinus basalis, it was noted that there was great bruising in the region of the chiasma, which, I could not help thinking, might have resulted in pressure on the optic nerve sheaths, and so prevented the entrance of much blood. Marked bulging was noted behind the eyeballs, but the swelling was not blood, and very few red cells were found in either intersheath space, even at the apex of the space. There were marked anatomical evidences of the lesion with which hemianopsia is associated. No retinal hæmorrhages were noted in either eye.

It is a curious fact that, in these last two cases, there was the typical localised area of atrophy, associated with hemianopsia; and in both these cases I expected, from a consideration of my other cases, that retinal hæmorrhage should have been present. Whether or not the atrophic lesion has any real bearing on the presence or absence of the hæmorrhage in the intersheath spaces in the last case, certainly there is a sufficient explanation in the great interference with the optic sheaths, due to special bruising in that region. I might have added a few more cases to this group, where the small amount of hæmorrhage, or the slow onset of the symptoms, made it practically certain that the intersheath spaces would not be rapidly distended, and so give rise to the conditions with which I venture to associate retinal hæmorrhages, but I thought it better to give the only cases I had which appeared to disprove my contention, and to offer such explanations for these exceptional cases as I felt it possible to give.

GROUP IV., *containing cases of subarachnoid hæmorrhage which were not secondary to fracture of the base, but to intracerebral hæmorrhage.* In this group there were four cases, three of hæmorrhage into the region of the basal ganglia, and the fourth was a pontine hæmorrhage.

CASE 1.—Male, æt. 67, while at work suddenly fell down insensible, and was found to have hemiplegia on the left side of the body. The coma became deeper, and he died the third day after the seizure. The hæmorrhage was from one of the lenticulo-striate arteries, and had caused great destruction of the internal capsule, rupturing into the lateral ventricle. There was an extensive subarachnoid effusion of blood over the left half of the cerebrum, especially over the Rolandic areas. There was almost no subarachnoid hæmorrhage over the right half of the cerebrum. There was marked post-bulbar swelling in the intersheath space of the left, eye and none in the right. The left eye alone showed retinal hæmorrhages of small size and few in number, and they were situated fairly near the disc. The intersheath space of the left eye contained much blood, while the right showed only a few red blood corpuscles and very little distension of the sheath space.

Case 2.—Female, æt. 75, had a hæmorrhage into the region of the basal ganglia on the right side, which had ruptured into the lateral ventricle and spread to the lateral ventricle of the opposite side, but only to a very limited extent. There was flattening on the left side of the brain, and a considerable amount of subarachnoid hæmorrhage on the right side and also over the under surface of the cerebellum. The subarachnoid hæmorrhage extends upwards for about 1½ in. over the parietal region from the Sylvian fissure. Both eyes show considerable post-bulbar swelling, but that on the right side is much more marked than it is on the left. There were a few small retinal hæmorrhages in the right retina and none in the left.

Case 3.—Male, æt. 67, had a large hæmorrhage in the anterior part of the left centrum ovale, bulging into the left lateral ventricle, but not apparently perforating it. The ventricles contained some thin watery blood which extended over the under surface of the cerebellum. There was fairly marked flattening of the convolutions on the left side of the brain. There were some scattered petechial hæmorrhages over the under surface of the temporo-sphenoidal lobes. No hæmorrhages were found in pons, medulla, or any other part of the brain. Both eyes show some post-bulbar swelling of a diffuse nature, but in neither eye was there any hæmorrhage, and although there were some red blood corpuscles in both intersheath spaces, the most part of the effusion was not cellular. The kidneys in this case were cirrhotic. The want of retinal hæmorrhages was due, I think, to the fact that the fluid was only blood-stained, and not therefore likely to have produced the great and sudden increase of pressure in the subarachnoid space.

Case 4.—Female, æt. 44, was admitted to the Infirmary comatose, and died three hours afterwards. The symptoms suggested either opium poisoning or a pontine hæmorrhage. There was a small amount of blood at the base when the brain was removed, but it had evidently distended the sinus basalis. There was a hæmorrhage into the left anterior part of the pons which had also invaded the left crus. Both cerebral hemispheres were somewhat compressed. The eyes showed marked post-bulbar swelling, but distinctly greater in the left eye. There were retinal hæmorrhages in both eyes, not of very great size or number. In this case there were some petechial hæmorrhages under the endocardium, and also the pleuræ.

The conclusions suggested by these cases is that a subarachnoid hæmorrhage, if sufficiently rapid in its development, will cause retinal hæmorrhages, and that if the effusion is unilateral the hæmorrhages will be confined mostly to the affected side. The exceptional cases in my series are those in which, with very considerable hæmorrhagic extravasation into the subarachnoid space, no visible retinal hæmorrhages occurred, and, as already stated, very few red blood corpuscles were found in the intersheath spaces, indicating that in some way the blood had been prevented from entering. In Case 5, Group III., the absence of blood in the intersheath space was amply explained by the extraordinary amount of bruising in the region of the chiasma, which would readily prevent any of the effused blood entering the intersheath space; while in Case 4 of the same group I think the want of the retinal hæmorrhages and the small amount of blood in the intersheath space may possibly be explained by the slow rate of bleeding into the subarachnoid space.

Within the last few days a case has shown, in the most marked way, a striking confirmation of the statements made in this paper, and it was noted that, although the subarachnoid hæmorrhage was mostly on the right side, the sinus basalis was full of blood, while the retinal hæmorrhages were mostly confined to the right side. In this case there were fully twenty hæmorrhages in the right retina, while there were only some five much smaller hæmorrhages in the left. The post-bulbar swelling of the right eye was much greater than that of the left. I might add that the hæmorrhage in this case was five days old before death occurred, but exact details of this case are not yet complete, so I omit it from my statistics.

It is not very easy to explain why the sinus basalis should not distribute the blood which passes into it equally into the sheaths of the two optic nerves, because there is no medium raphé, and the stalk of the pituitary is the only structure which divides the space in any sort of way. The only reasonable explanation seems to me to be one based on hydrostatic principles. There is no question that the blood enters the intersheath space from the sinus basalis, and that it is not effused from the vessels of the pial sheath. Presumably the sudden distension of the intersheath space, just behind the eyeball, causes great increase of pressure in the retinal vessels, and rupture. There is very generally a good deal of flattening of the convolutions on the cerebral hemispheres on the opposite side from the subarachnoid hæmorrhage, and it is certainly in those cases where this is most marked that unilateral retinal hæmorrhages are most frequent.

It may therefore readily be supposed that the sudden increase of pressure in the subarachnoid space may, if unilateral, tend to pass up the intersheath space of the same side, while the opposite intersheath space may be occluded by the distorting force, which must be associated with the production of flattening. But whether this is or is not the explanation, the fact remains that unilateral retinal hæmorrhages are the rule in cases of a unilateral subarachnoid hæmorrhage. I hope to publish a larger series of cases in a later paper, when a sufficient number have been collected and examined, because I cannot help anticipating that the recognition of retinal hæmorrhages will be helpful in the diagnosis of cases of fracture of the skull, and in those instances of intra-cerebral hæmorrhage where rupture occurs and the blood reaches the subarachnoid space, causing sufficient and sudden increase of pressure to produce retinal hæmorrhages. And especially are these retinal hæmorrhages likely to prove of diagnostic value, if they are unilateral and not associated with any inflammation of the optic disc of a date and duration which would explain the appearance of retinal hæmorrhages on other grounds.

While I have no hesitation in claiming some diagnostic significance for these retinal hæmorrhages, it is diffcult to affirm that in most cases such recognition will afford an indication for treatment. Unilateral retinal hæmorrhages determine, however, the side of the subarachnoid effusion, and, where the question of operative interference is under consideration, this information may be helpful in choosing the best site for trephining.

I have brought this paper forward with a very inadequate number of cases in support of my views, in the hope that it will arouse interest in the subject and lead to further clinical as well as pathological observation. My work recounted here is practically entirely post-mortem observation, so that minute retinal hæmorrhages may readily have been missed, notwithstanding every care used to ensure accurate observation. Clinical investigation is therefore most desirable, and I trust I may be able to offer some clinical as well as pathological experience in my next series of cases.

I have had considerable difficulty in getting any bibliographic reference to this subject, in connection with which, apparently, very little work has been done. It has of course long been recognised, by experimental and clinical observers, that subarachnoid blood can enter the intersheath space, and there are cases on record in which, following on fracture of the base, from which the patient recovered, blood had made its way into the intersheath space and been followed by optic neuritis and atrophy. But most of my cases were speedily fatal, and in these cases the condition of the retina had generally escaped attention, while no systematic examination of the eyes after death seems to have been made in the kind of cases included in this paper.

The photographs which illustrate this article show the appearance of the blood in the intersheath space, and also the way in which the blood makes its way into the lymph spaces between the fibres of the sclerotic, thus probably greatly accentuating the choking of the papilla and increasing the strain on the retinal vessels.

For most of the cases referred to, and for much courtesy received in the prosecution of the research in the pathological department since my term of office as pathologist expired, I am deeply indebted to many of my colleagues on the staff of the Royal Infirmary.

DESCRIPTION OF PLATE.

FIG. 1.—Longitudinal section through optic disc of right eye, Group II. Case 2. It shows very clearly the hæmorrhagic effusion into the intersheath space. (× 12.)

FIG. 2.—Longitudinal section through optic disc of left eye, Group IV. Case 1. Only half disc is shown. Most of the hæmorrhagic effusion happens to have been washed out of intersheath space, which appears to be nearly empty, but at the apex of the space hæmorrhagic extravasation may be seen passing into the lymph spaces in the sclerotic coat. (× 50.)

FIG. 3.—High power view of the hæmorrhagic effusions, mostly into lymph spaces of the sclerotic shown in previous photograph. The part of sclerotic represented is near apex of the intersheath space. (× 200.)

THE TREATMENT OF PSORIASIS.

By W. T. FREEMAN, M.D. (Durham), F.R.C.S. Eng., *in charge of Skin Department, Reading Dispensary.*

IN spite of the advance made along many of the lanes of dermatology, no very precise statements can yet be made concerning the etiology or pathology of psoriasis, and as long as such want of precision remains, the methods of treatment are necessarily varied, and often vaguely applied.

Some well-known authorities support the idea that the disease is brought about by the doings of a special organism, and it is believed that it has been isolated. Inoculation experiments have been carried out, and apparently with, but by no means with decided, success. Some of the possibilities of psoriasis being conveyed by contagion are collected and commented on by George Pernet on pp. 437-8 of *The British Journal of Dermatology* for 1901. I know a fellow-practitioner, himself a sufferer, who argues strongly that he caught the disease, and also that he conveyed the contagion to his son. Both in his own case, and in the case of his son, the site of an injury is stated to have been the starting-point of a scaly dermatitis, which soon spread, and took on the characters of a general psoriasis. We are now somewhat familiar with this complaint starting from such a centre as recent vaccination scars. This probably simply means that the vaccination areas have presented the first suitable soil in which some form of skin inflammation has had the chance of asserting itself—now psoriasis, now lichen planus, or, it may be, a bullous or other dermatitis. Such cases look like examples of auto-inoculation, the contagion appearing to spread peripherally, and the disease to become generalised from surface affection. They may, however—and this, on the whole, seems the more probable explanation—be cases generalised from a poison acting from within, but perhaps at first entirely absorbed from the depressed centre; that is to say, from the injured area which offered the first suitable soil for a propagation of a vigorous growth. It should be remembered that most cases of psoriasis tend to spread at the borders, and to involute centrally.

At a meeting of the Dermatological Society of London, 11th June 1902, Dr. Radcliffe Crocker showed a girl, æt. 15, with psoriasis following vaccination. Nine months after the vaccination, the disease developed upon each of the scars, and fourteen days later other patches formed on the same arm and forearm. The girl had not suffered previously, and there was no history of heredity.

At the following meeting of the same Society three similar cases were shown by Dr. S. E. Dore.

In the case of a young man the disease started on the eighth day after the vaccination. There was no family history of psoriasis, and he had never had any other skin disease before.

In a woman, æt. 33, the attack was a very extensive one, and started from the scar areas two months after vaccination. No evidence of family history or of any previous skin disease.

In the third case, a girl, æt. 18, there was a history of a scaly skin attack at 11 years of age.

A few other similar cases have been reported.

There is hardly any theory regarding the cause of psoriasis which cannot be opposed; for instance, the suggestion just offered (a generalisation from within) seems negatived by the well-known fact that the subjects of this complaint are frequently in good health. With a lowered condition of general health the skin affection temporarily disappears.

We meet with constant examples of cases appearing to negative the idea of local contagiousness. Such a history as this, taken from one of my own case books, is common enough:—

CASE 1.—Mrs. P.'s little boy, æt. 7 years. For between two and three years has had psoriasis vulgaris on body, limbs, and scalp. No history of heredity. Two other children in family, both of whom have been accustomed to play freely with their brother, have worn the same caps, and slept in the same bed with him, have perfectly clear skins.

As far as heredity is concerned, or, at all events, the tendency to contract the disease in a second or third generation, the proofs of it seem fairly strong. But the believers in the theory of contagion would argue that a son would be very likely to be infected by his father. The most helpful story of heredity, or tendency, is that the disease may show itself as wearing itself out in a second or third generation, in the shape of a general ichthyosis or xerodermia, or possibly (less likely) in an attack of seborrhœic eczema. At the same time we must remember that a dry seborrhœic condition of the body is often difficult to diagnose from psoriasis, and a psoriasis in a person of active sebaceous habits may be difficult to diagnose from inflammatory seborrhœa. The red points to be observed on the removal of the scales, and the usual seats of election being specially affected, are perhaps the prominent diagnostic characters of psoriasis, and the oiliness of the scales or crusts, and the method of spread from the scalp downwards, should be helpful means of diagnosis in the case of seborrhœa.

Balzer[1] argues that psoriasis is a general disease. He dwells upon its long duration, its complications (such as arthropathies and cachexia), its generalisation, and the rate of eruptions. He points to the symmetrical distribution as tending to prove a nervous origin or connection, and he mentions the attacks of exfoliative dermatitis, which sometimes occur in the course of the disease.

It is an interesting part of this complaint, the occasional attack of exfoliative dermatitis. One not infrequently hears of this complication. In my own experience it has generally, if not invariably, been brought about by over-treatment; for instance, by too heroic or too prolonged doses of arsenic internally, combined with excessive stimulation locally. Chrysarobin will in some subjects start a most severe form of exfoliative dermatitis, and it is by no means necessary that the scaly disease should be preceded by a chrysarobin purple erythema.

The pathology of the disease being still somewhat obscure, it follows that the treatment cannot be laid down upon any hard-and-fast lines. Probably the greater number of authorities trust almost entirely to local treatment, but there are others who believe in good results being obtained from internal medication. Rest, rest in bed where it can be enforced, is a most important part of treatment, and there are few cases that will not yield to a six weeks' course of lying in bed, even where remedies, both external and internal, are withheld. This is strong but not positive evidence against the parasitic theory, for the result may be brought about by the quietude in some way rendering the soil unfit for the growth of a special organism. On the other hand, it is reasonable to infer that the special factor at work is the soothing of part or whole of the nervous system, and one cannot help thinking of the vasomotor centre.

Some of the worst cases that I have had to deal with have been in patients of a distinctly nervous temperament. It is these patients that are particularly prone to show such a complication as an exfoliative dermatitis.

There are a few remedies, one or the other of which is nearly always employed when an internal remedy is to be given. They are salicin, salicylate of soda, aspirin, thyroid extract, arsenic, iodide of potash, ichthyol.

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[1] *Rev. d'hyg. Thérap.*, Paris, 15th May 1902.

There are a few external remedies, one or other of which is nearly always employed. They are chrysarobin, some form of tar, salicylic acid, pyrogallic acid, sulphur, carbolic acid, ichthyol, mercury. Treatment by the X-rays is being employed, and is on its merits. Acting, however, simply as a caustic, it is hardly likely to ever be of much service when we are dealing with so generalised a disease as psoriasis.

Before discussing the treatment in detail, it is worth while mentioning the fact that it is always unwise to promise a permanent cure. Relapses are common, even in those cases when apparently the last trace of the complaint has disappeared, but a great deal of relief can be given by remedies properly applied, either internally or externally, or by both methods combined. External treatment is usually more relied upon than internal; but I am decidedly of opinion that a large percentage of cases can be cured, either temporarily or permanently, without any external treatment, unless free ablutions be so included.

In all acute cases, and particularly those of the inflammatory type, rest in bed should be enforced until the disease has nearly disappeared. The only relief from such rest should be for attention to the calls of nature, and for a daily half-hour's soaking in a hot bath. The water should be maintained at a temperature of about 90° F., and each gallon of water should contain 2 drms. of borax or carbonate of soda, and 1 oz. to 2 oz. of starch. If the disease be of a seborrhœic type, or if it occur in a sebaceous patient (meaning thereby where there is a tendency to over-secretion of the sebaceous glands), then, additionally, the bath should contain from 1 drm. to 2 drms. of sulphurated potash, but this addition should be carefully made and the results watched. Medicinally, arsenic should be avoided, but salicin in from 10- to 40-gr. doses may be given, starting with 10 grs., and getting up to 40 grs. within a fortnight. In a distinctly neurotic patient (and acute inflammatory cases are more common in neurotic people), 5 grs. each of the bromides of ammonium, sodium, and potash should be given three times a day for several days. The diet should be light and nourishing and unstimulating,—indeed, just such a diet as one would order for a case of acute eczema. If the bath leaves a dryness of the skin, a mild bismuth and calamine ointment, made up with equal parts of vaseline and lanoline, may be smeared over the body before the patient returns to bed. Such external remedies as chrysarobin and tar, and even salicylic acid, are strongly contra-indicated in acute cases of the inflammatory type.

I have a routine treatment for chronic cases in the not infrequent sebaceous patients. They generally tell the same sort of tale; they have had it for years, and it has never gone away, but every month or two for a few weeks at a time it gets very much worse. The following case is a typical one:—

Case 2.—W. B., æt. 28, with a greasy type of skin, consulted me on 5th May 1902, for a severe attack of generalised psoriasis. It was just one of the bad times, but it had never left him for seven years. He had had continuous hospital and other treatment for four and a half years. There was considerable irritation, and some of the body patches were nearly as large as a soup plate. He was ordered salicin, rapidly increased to 40-gr. doses, three times a day, together with 10 minims tinct. nuc. vomicæ. He also had daily baths, containing 2 drms. to the gallon of sulphurated potash, with an ounce or so of starch. On 12th June there was considerable improvement, on 19th June it was practically cured, and on 7th July he was quite well for the first time for seven years. At the end of October he had a bad relapse, and by Christmas he was again practically well. He had the same treatment, with the addition of a mild sulphur and mercury ointment after the bath. He may still get relapses, but I believe, with perseverance, they will appear at longer intervals, and that eventually the disease will, so to speak, get knocked out altogether.

It is difficult to lay down any rule concerning the treatment of psoriasis by thyroid extract, but I am positive that some cases get well quicker under this treatment than under any other. The disease should be of the chronic, dry, scaly variety, as opposed to the inflammatory or sebaceous type. The patient must be young and fairly robust. The greatest care should be exercised if thyroid extract be exhibited after the age of 45. In any case it is better borne if arsenic in moderate doses be given with it. Personally, I should not adopt this treatment in the case of any person beyond middle age, but when given in suitable cases I am sure of its efficacy.

Case 3.—A. H., a robust girl, æt. 18, consulted me in middle of 1899 for psoriasis of many years' standing. Various kinds of treatment had been tried, and I failed to do any good for her until I started with thyroid gland extract, giving 1½ gr. night and morning at first, and gradually increasing to 10 grs. daily. Larger doses are seldom, if ever, necessary. This girl now rapidly improved, and in a month or two not a spot was to be found. On 6th September 1900 I had a note saying that she remained cured. In March 1902 she relapsed, but not to the same extent as formerly. I started with chysarobin, traumaticin, and salicin, but discontinued the treatment after a few weeks, and gave her again thyroid extract and arsenic with a compound chrysarobin ointment (1 drm. ad 1 oz.) to rub into the worst spots night and morning. On 10th July she reported herself as well again, with the exception of a small patch on the thigh. I should add that this time she had additionally a very occasional hot alkaline bath.

Such a patient is fairly typical of the class of persons suitable for thyroid treatment. Children with average general health are also fit subjects. They must, of course, be kept under observation, and very frequently be given arsenic at the same time. Children stand comparatively large doses of arsenic without ill effects.

In weakly patients, old or young, arsenic is *par excellence* the internal remedy, and should be combined, where there is a neurotic tendency, with regular doses of bromides. I think that a dose of 3 or 4 grs. each of the bromides of ammonium, sodium, and potassium, acts very much better than a 9 or 12 gr. dose of any one of these salts. Alkaline baths would be simultaneously used for the purpose of removing the scales, and chrysarobin, tar, or other external remedy should be well rubbed in night and morning. It is best to feel one's way with the chrysarobin, beginning say with 10 grs., and working up to 1 drm. to 2 drms. to the ounce. It should not be used at all about the face and neck, and only with caution on the scalp.

What tar application should be used? Probably the liquor carbonis detergens is as good a preparation as any. Balzer in his paper recommends oil of cade, diluting it first with an equal part of glycerole of starch, and working up to full strength. The treatment is efficacious, but is apt to produce a tar acne. Balzer also gives a formula for a tar bath—oil of cade, 50 grms., extract of quillaia, 10 grms., one yolk of egg; and distilled water to 250 grms.

Arsenic is almost a specific of psoriasis of the nails. The nail disease may exist alone, the body and limbs being unaffected.

CASE 4.—At the end of August 1901, F. W., a girl, æt. 18, came to me. The nails of the middle and ring finger of the left hand were being steadily lifted up from their beds by dry thickened epithelial matter. Three-fourths of the middle finger nail looked dead. She complained of little or no irritation. There was no pitting or furrowing of the nails, or, if any, only to a very slight extent. The disease was of old standing. The other nails looked healthy. There was no general disease. I ordered arsenic in gradually increasing doses. On 19th September there was distinct improvement, on 3rd October still further improvement, and in the beginning of November she was cured, but a new nail growing up from the mid finger had a somewhat ragged appearance.

Of the treatment of psoriasis by iodide of potassium, I have but little experience.

To summarise the treatment, I believe that nearly every case has to be treated on its merits. It is not wise to believe dogmatically either in external or internal treatment taken by itself. The majority of cases will most quickly get well if they are treated by both methods.

Acute cases will, as far as internal treatment is concerned, be more likely to be benefited by salicin or by the salicylates than by any other drug. When there is much itching, combine full doses of nux vomica with the salicin. The salicin may be given, up to 60-gr. doses. When there is much neurosis, combine the treatment with the bromides. Do not externally use the more powerful remedies.

All cases, and particularly the acute cases, will improve rapidly with complete rest in bed, and perhaps absolute rest is the one specific for the complaint.

Alkaline warm baths may be safely prescribed in all cases, but in the oily type of case sulphur is to be substituted for or combined with the alkali. The bath treatment when it can be carried out is very important.

Of the external applications, chrysarobin, in spite of its staining and sometime irritating properties, still remains the best we can employ. Avoid its use about the neck, and do not use it anywhere in an inflammatory type of the disease. Its strength requires careful regulation, and as a rule it should be rubbed in once or twice in the day. If the traumaticin be used, it may be left on for three or four days, and some keratolytic agent should have been previously used.

There is no doubt about the good effects of thyroid extract in certain cases, but it is a dangerous remedy for old people, and a look-out for thyroidism is necessarily maintained whatever be the age of the patient. Heroic doses seem to be unnecessary, and the larger dose may be best given at bedtime. I think the method of giving arsenic with it does help to prevent ill effects.

Arsenic is a useful internal remedy in suitable cases. Get rid of the last remnant of the disease—if you can. The majority of cases relapse; if they do not already know it, patients should be told this. A minority of cases clear up, temporarily or permanently, quite unaccountably. There is no occasion to tell the patient this. The treatment on the whole is now more successful than it used to be.

ON HAND DISINFECTION.[1]

By Robert Purves, M.B., F.R.C.S.Ed., *Tutor in Clinical Surgery, University of Edinburgh, and Assistant Surgeon, Deaconess Hospital, Edinburgh.*

Perhaps one of the most important questions bearing on hand disinfection is that concerned with the protection of one's hands from infection. It is desirable not only to protect the hands while one is engaged in operating on an infective condition, but also to have regard to what may be termed the ordinary daily care of the hands. The methods of disinfection at our disposal are not yet so certain as to enable us to neglect any precaution, trivial though it may seem, which will aid us in attaining the desired result. One's endeavour should be to reduce the infective potentiality of one's hands to a minimum, and thus to throw less responsibility on our means of disinfection.

Mikulicz and Kocher both lay stress on this point. In 1899,

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[1] Read before the Edinburgh Medico-Chirurgical Society, 4th March 1903.

Kocher wrote strongly on this subject, and in the recent edition of his book[1] he emphasises the value of this principle. His suggestion, that one should always wear gloves, especially in hospital and during the examination of patients, and only remove them before preparing to operate, is an ideal way of obtaining a "germ free" hand, but custom renders this difficult to carry out.

Short of this there are several ways by which one may materially diminish the infectivity of one's hands—

1. By the regular use of gloves when going about out of doors; one thus obtains protection from ordinary dirt and from accidental cuts and abrasions, which, apart from producing personal discomfort, may prove a source of danger to both one's self and the patient.

2. By the regular washing of one's hands after examining a patient, and after accidental contact with infected material, supplemented by disinfection when the infection has been virulent.

3. By keeping the nails cut as short as possible, and the nail-folds trimmed.

4. By wearing rubber gloves, not only while operating on infective conditions, or dressing septic wounds, but also while handling pathological specimens. In the last instance one protects the skin particularly from irritation by formalin or spirit. For rectal, vaginal, and oral examination, a rubber finger stall may replace the glove. Further, as constant washing and disinfecting of the hands, especially during winter, is productive of roughness and sensitive cracks, which not only gather dirt but also render cleansing difficult and painful, it is necessary to institute a nightly toilet of the hands. Washing, thorough drying, and the application of some emollient, occupy but a few minutes, and conduce greatly to personal comfort. It is especially the dehydrating property of alcohol, when used for hand-washing, that necessitates attention to the skin. The most suitable preparations I have tried are lanolin, and one composed of gaultheria oil, boric acid, starch, glycerin, tragacanth.

By such means one can very materially diminish the infectivity of the hands.

According to Krönig and Reinike's[2] observations, it is possible to reduce it to nil. They found that, in time, hands, if not re-infected, became free from germs.

Personal observation has shown that, after some hours' washing, the hands of washerwomen yielded no organisms. These facts support Haegler's[3] contention, that the depth to which germs penetrate the skin is exaggerated. He found that in the sweat glands there were almost no organisms, and that in the hair follicles they were superficial.

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[1] "Chirurgische Operationslehre," 1902.

[2] *Vide* Kocher, 1902.

[3] "Händereinigung, Händedesinfektion und Händeschutz," Basel, 1900.

The importance of *prolonged initial* cleansing with soap and hot water is emphasised by all recent writers. The preliminary of cutting the nails short is essential. Although the finger-nail may be useful on occasions, it is an impediment to effectual purification. It is general to cut the *nails* before washing at all, but if the hands be washed for a minute, the nails will be softened, and can then be cut more easily and closely; moreover, it is then easier to scrape away the epithelium from the nail folds. It is generally considered that *running water* is preferable to a basin of water. The objection that one loses the advantage of a thorough soaking of the skin may be largely overcome by a "rose" of large diameter being fitted on to the tap.

In the use of the nail brush, a regular system, such as the following, may with advantage be adopted:—*First*, brush the nails themselves, working at right angles to the fingers; *pass* gradually round to a line parallel with the fingers, so that the lateral nail folds may be explored; *thence* the dorso-lateral aspects of the fingers over the webs and back of the hand. *At this stage*, the brush may be brought back to the tips of the fingers, and the dorsum of the fingers and hand scrubbed, the brush being held at right angles to the fingers, and the hand being lightly clenched to stretch the skin and smooth out the furrows. *Then* in a similar manner the palmar surface. Attention should be directed to the thumbs, which frequently escape with but mild treatment. Moreover, the right hand is a more thorough worker than the left, and consequently extra attention should be bestowed upon it. The left hand is found to be more often sterile than the right.

To go over both hands thoroughly, allowing no part to escape, takes time, and various periods are recommended. The difficulty of estimating time is great, and each individual has his own idea as to the length of a minute; a recorder, such as a sand-glass, has therefore its advantages. At least ten minutes should be devoted to this stage. Kocher dispenses with a recorder, but to those less confident than he the sand-glass is an undoubted aid. If the nails be cut as short as possible, there is no need for a nail-scraper.

Such a cleansing of the hands, although it removes all gross dirt and a large quantity of dead epithelium and organisms, still leaves much to the second stage of purification.

With a view to ascertaining if it were possible to get rid of all or nearly all organisms by means of soap and water alone, I made a series of sixty observations on the hands of washerwomen. They used wooden tubs, yellow Castile soap, and hot water, the water being periodically changed.

Their hours of washing were from 9 to 10; 10.15 to 1; 2 to 4; 4.15 to 6. Cultures were taken with a platinum knife, by scraping the dorsal and palmar surfaces of all four fingers of one hand.

At 10.45 A.M.—After one and a half hours' washing, eleven cultures were made.
In five there were staphylococci . . . 45·5 per cent.
In four of these, *aureus* . . . 36·4 „
At 3.30 P.M.—After four hours' washing, thirty-six cultures were made.
In eighteen there were staphylococci . . 50 per cent.
In nine of these, *aureus* . . . 25 „
At 4.30 P.M.—After five hours' washing, no staphylococci were found.

Subtilis and other bacilli were always present. The soap itself was sterile. The walls of the tubs and outside of soap yielded organisms similar to those on the hands. Before scraping the fingers they were rinsed under the tap.

It would appear that it is only after about five hours' washing that it is possible to get rid of all cocci from the surface of the skin and from the ducts and follicles.

It may at first seem difficult to draw any practical conclusion from these results, but if it be borne in mind that these persons are in the habit of taking no care of their hands, have many opportunities of contaminating them, and have exceedingly rough hands, it makes it possible for one whose hands are in a favourable condition to start with, to obtain a considerable degree of "germ poverty," by a washing extending over a much less period, especially when aided by intelligent use of a sterile nail-brush.

The nearer one approaches to ideal purification by such simple means, the less has one to depend on the after use of active disinfecting agents. The selection of the means for completing the disinfection process depends largely on individual leanings and existing circumstances. One must consider the resources of the surgeon or institution, the numbers and training of the assistants and nursing staff, the care the surgeon and his assistants are able to bestow on their hands at times when they are not operating.

It is only under the most favourable circumstances that one can successfully carry out an operative technique in which active disinfectants are dispensed with.

Whatever method be selected, the success it meets with depends on the thoroughness with which it is carried out, more particularly on the part of those assisting, who are not in direct contact with the field of operation, and who perhaps, unlike those actively engaged, have not the same incentive to sustain a consistent thoroughness and attention to detail.

The two methods which, in the light of recent research and experience, rank highest, are the hot-water alcohol method of Ahlfeld and the spirit-soap method of Mikulicz.

Ahlfeld advises 96 per cent. alcohol for five minutes, the spirit being once changed. The action of alcohol is considered to be chiefly mechanical; in part, no doubt, it is destructive to at least some organisms, particularly when diluted to 70 per cent. (Mikulicz). It appears to have a special action on the epithelium, in addition to its fat solving property. It favours separation of loose scales, and at the same time contracts the deeper layers. Schaffer[1] who offers the last explanation, concludes that Ahlfeld's is the better of the two methods.

The results obtained by Kocher, after an extensive trial, form the strongest argument in favour of its adoption: Three hundred and twenty-five consecutive cases of primary healing after operation, with but one exception.

Mikulicz's spirit-soap[2] of the German Pharmacopœia has in his own hands yielded excellent results. The substitution of methylated spirit for rectified spirit in its preparation, in order to reduce the cost, has not given satisfaction. Though, after using the modified soap for a year in the Deaconess Hospital, we found the results to be slightly better, the frequent irritation of our hands and of the patients' skin caused us to abandon it. The investigations of finger nails were made while using Mikulicz's soap.

It is now twelve years since gloves were first introduced, and at the present time, although much has been written on the subject, they have not obtained the recognition they deserve.

The two forms which are most suitable, surgically, are the rubber and cotton-thread gloves. Other materials, such as leather, and devices such as permeating cotton gloves with paraffin, or varnishing the hands, have not commended themselves.

Discussion centres round the cotton gloves, for it is readily granted by all that rubber gloves can ensure a perfect protection. Their chief advantage, and it is a great one, is that they are absolutely impermeable, and consequently purification of the hands, as is imperative under other conditions, is unnecessary. The outside of the glove can be sterilised with certainty by means of antiseptics, and so long as the glove remains intact, wound infection from the hand is impossible. The risk of injury to such a glove, which is thin enough to allow of at all delicate work, is great, and the accumulation of organisms and sweat within the glove ensures a certain infection in the event of a puncture. Therefore, for general use, rubber is not suitable. It is, however, invaluable from the other point of view, namely, that of protection to the hands. They should, therefore, always be worn when there is any risk of contaminating the hands.

Thread gloves, as used by Mikulicz, are of definite value during an operation. They can be rendered certainly sterile, and, so long as they are dry, form a reliable barrier between the wound and the hand. Infection of the gloves from the air may be neglected; it is from the hand the organisms enter, more especially when the glove becomes soaked. The pressure of the fingers during operating squeezes the blood out of the glove, and with it some organisms; not all, however, for many are caught in the meshes.

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[1] "Experimentelle u. Krit. Beitr. z. Händedesinfektionsfrage," Berlin, 1902.

[2] "Handbuch der Praktischen Chirurgie, Herausgegeben," von E. von Bergmann, P. von Bruns, und I. von Mikulicz, Bd. iii. Th. 1, Stuttgart, 1900.

For this reason frequent changing is necessary, and although this takes time, the delay is but slight, if care be taken that the gloves are not too tight. The rinsing of the hands prior to putting on the fresh gloves removes those organisms not carried away in the glove.

The result of Kocher's experience is, that gloves are probably of value in the earlier active stage of an operation, but are certainly of value during the application of ligatures and sutures. This is the time when infection is apt to be introduced, the ligature becoming infected from the fingers during the process of tying the knot. That this can occur is proved by Haegler's observation, that sterile silk merely drawn through the fingers, after the hands have been prepared for operating, invariably becomes infected. This being so, how much greater is the risk of infection where sufficient force is used to tie the knot, a force which, as all must have experienced, sometimes causes the ligature to cut into the skin. This, I think, is an argument in favour of using short lengths of silk or catgut for ligatures, and not a reel.

The pressure of the fingers in tying the knot does not rest on the portion of ligature forming the knot itself, but on the 5 or 6 in. on either side, which are grasped in the hand, and the greatest pressure is at a point 1 in. or so from the knot. When the ends are cut off short, all the thread that has come into contact with the fingers is removed.

When working with a reel of catgut, the first ligature having been tied, the catgut is run through the fingers for number two, and thus all the catgut is liable to infection.

This danger can be minimised by leaving all ligaturing to the end of the operation, and by wearing fresh gloves while tying the vessels.

In cases which are not aseptic to commence with, thread gloves are a source of danger as they absorb the infected fluids. In such cases we have the rubber gloves.

In all operations of the head, neck, and thorax, the danger of infection from the hands of the anæsthetist may be largely obviated by his putting on thread gloves just before the operation is commenced.

The objection raised, that gloves interfere with the activity of the fingers is reasonable, but practice, and using a proper size, enable one to overcome this.

The sense of security of one's grasp on ligatures and sutures is an undoubted advantage.

One other point I would put forward, is the value of control cultures from the hands and from the operation area. One thus obtains a guide as to the effectiveness of one's methods, and an infection may be traced to a definite source. Further, it stimulates one to follow rigidly the rules of working, and any retrogression becomes evident. Cultures should be taken from the nail folds and from under the nails, and are most easily effected by sterilised slips of wood, such as lamb skewers. For the skin a long-handled, straight, blunt-pointed knife is very suitable.

TABLE I.—*Table of Cultures from Finger Nails and from Patients' Skin.*

		Skin.	Sterile.	Not.	Hands.	Sterile.	Not.	Healing.
Oct. 20, 1901	Excision, cervical glands	1	..	1 *albus.*	2	1	1 *albus.*	1st incision, P.p. 2nd ,, slight suppuration.
,, 26, 1901	Recurrent appendicitis	1	..	1 *albus.*	2	2	..	P.p.
,, 31, 1901	Popliteal sarcoma	..	..	..	4	3	1 *aureus* *sarcinæ*	P.p.
Nov. 7, 1901	Gall stones . .	1	1	..	4	4	..	P.p.
,, 8, 1901	Excision, ankylosed elbow	1	..	1 *albus* *citreus*	2	1	1 *subtilis.*	P.p.
,, 20, 1901	Excision, varicose veins	..	..	..	4	4	..	P.p.
,, 28, 1901	Talipes varus .	1	..	1 *albus* *subtilis*	4	3	1 *albus.*	P.p.
,, 29, 1901	Skin grafting .	1	1	..	..	..	..	P.p.
Dec. 13, 1901	Inguinal hernia .	1	..	1 *albus.*	2	1	1 *aureus* *albus*	P.p.
Jan. 16, 1902	Gastro - enterostomy	..	..	..	4	4	..	*albus* sup. stitches.
Mar. 20, 1902	Inguinal hernia .	..	..	.	4	4	.	P.p.
June 21, 1902	Laparotomy .	1	1	..	4	4	..	P.p.
Oct. 12, 1902	Excision, varicose veins	1	1	..	4	4	..	P.p.
,, 22, 1902	Tubercle of ischium	..	..	..	2	2	..	Packed.
,, 29, 1902	Sinus, loin . .	..	..	..	2	1	1 *albus.*	Packed.
Nov. 2, 1902	Laparotomy .	..	..	..	2	2	..	P.p.
,, 5, 1902	,, .	1	1	.	4	4	..	P.p.
,, 7, 1902	Recurrent appendicitis	..	..	..	2	2	..	P.p.
		10	5	5	52	46	6	

The chart indicates the inquiries made from time to time during the past year.

Note.—In only half the cases was the skin of the operation area sterile. Cultures were taken from both hands of the surgeon, indicated by Fig. 2; and from both hands of assistant, also by Fig. 4. Only twice was *aureus* found, and in four out of six instances the right hand was at fault.

ASCITES IN EARLY ALCOHOLIC CIRRHOSIS OF THE LIVER.

By F. Parkes Weber, M.D., F.R.C.P., *Physician to the German Hospital, London.*

Although ascites due to perihepatitis and non-suppurative peritonitis is well recognised, I wish to draw attention to certain cases in which this kind of ascites forms the most important clinical feature in early alcoholic cirrhosis. In such cases the successful results obtained by the "Drummond-Morison-Talma" operation are certainly rivalled by those obtained by simple tapping.

Some years ago, a man, æt. 44, who had been a drinker, died at the German Hospital.[1] Six years previously he had been twice tapped for ascites. On the first occasion, 19½ pints, of specific gravity 1020, were withdrawn; on the second occasion 24 pints, of specific gravity 1016. At that time the liver had been felt about two inches below the ribs, hard and uneven, and a diagnosis of cirrhosis had been made. Since then he had suffered from an attack of erysipelas, and had brought up blood, but the ascites had not returned. The necropsy, six years after the ascites, showed cirrhosis of the liver. The liver weighed 89 oz. The peritoneum over the liver and diaphragm was exceedingly thickened and hard, and part of the spleen was covered by fibrous tissue of almost "cartilaginous" consistence. The mesentery was thickened and tough, and the coils of intestine were slightly adherent. Non-suppurative peritonitis, chiefly localised about the liver and spleen, had evidently, in this case, been the cause of the ascites six years before the patient's death.

A still more remarkable example of ascites in early cirrhosis is the following case, recorded in a paper on the prognosis of cirrhosis of the liver, by H. Ehret of Strassburg:[2]—

A man, æt. 72, died in 1900 of the results of œsophageal carcinoma. In 1870, thirty years before his death, his abdomen was tapped several times for ascites. There was a history of alcohol, and hepatic cirrhosis was, at that time, suspected. He had jaundice, and pains in the region of the liver. Alcohol was forbidden, and, in the course of two years, the dropsy, jaundice, and hepatic pains disappeared, though, for a few years, he still often suffered from pains in the region of the spleen. The necropsy, on the patient's death in 1900, showed a small hobnail liver, the fibrous tissue in the liver being very poor in nuclei, and obviously of old date. The spleen was enveloped in thick, firm, fibrous adhesions.

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[1] I described the case more fully in the *St. Barth. Hosp. Reports*, London, vol. xxxiv. p. 321.

[2] *München. med. Wchnschr.*, 1903, No. 8, p. 322.

Dr. W. H. Dickinson[1] mentions the case of a boy, 7 years old, with hypertrophic cirrhosis, presumably due to alcohol, and with ascites nearly to bursting. He was tapped ten times in fifty-five days, with the total removal of 958 oz. of fluid. The drink was then limited, at its minimum, to 6 oz. of water, a few small pieces of ice, and 1½ oz. of brandy in the twenty-four hours. The cure of the dropsy was immediate, complete, and final. At this patient's death, two years afterwards, from an abscess of the brain, the liver was found markedly cirrhotic and hobnailed, and the peritoneal cavity was obliterated by delicate adhesions.

F. Floyd[2] gives the case of a man, æt. 67, who had been accustomed to take spirits freely. In July 1900 he had to be tapped for ascites, and from this time, till his death in September 1902, he was tapped 205 times. At the necropsy the liver was found shrunken, hard, and coarsely nodular, and extensive adhesions were present in the upper abdomen, the viscera being bound to each other and to the parietal peritoneum. Although, in this man, the ascites was not cured, I mention the case as illustrating the important part played by more or less localised non-suppurative peritonitis in the production of ascites in cirrhosis of the liver.

Attention has been drawn to the rôle of peritonitis in causing ascites in cirrhosis cases, by Campbell Thomson, and more especially and repeatedly by Hale White. The latter writes:[3]—"If you have a case of supposed cirrhosis of the liver, and you tap and the patient gets better, but the fluid re-collects and again you tap, such a case appears to contradict the statement, that when the patient is ill enough to require paracentesis it means he is near his end; but at the necropsy it is nearly always found that the diagnosis has been wrong, and that the patient has not got uncomplicated cirrhosis of the liver, but has chronic peritonitis."

I would suggest one modification in these views. It is that the perihepatitis, perisplenitis, or other non-suppurative, more or less localised peritonitis, which not rarely gives rise to ascites in relatively early cases of cirrhosis of the liver (a peritonitis which, by the way, I would point out is *not necessarily chronic*, any more so than serous pleurisy is necessarily chronic), is probably, etiologically and clinically, so closely connected with the hepatic disease that it may be reckoned as a part of the disease, and a very important part too.

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[1] *Lancet*, London, 1899, vol. i. p. 1613.
[2] *Brit. Med. Journ.*, London, 1903, vol. i. p. 134.
[3] *Ibid.*, vol. i. p. 536.

THE NERVOUS AFFECTIONS OF THE HEART.[1]

By G. A. GIBSON, M.D., D.Sc., F.R.C.P.Ed., *Physician to the Royal Infirmary, Edinburgh.*

SECOND SERIES.

LECTURE I.—CHANGES IN RATE.

THE first series of the present course of lectures, delivered last year before the Royal College of Physicians, was confined to the sensory disorders of the heart and the sensory symptoms of cardiac disease; for the second series, now to be given, were left for discussion the disturbances of motion. Although the sensory disturbances of the heart are, in themselves, sufficiently complex, the difficulties which surround them fade into insignificance as compared with the troubles that beset the problems connected with the motor disorders of the heart. We shall, indeed, doubtless discover that these lectures will be all too short for the purpose of their consideration, and it will be necessary to restrict our purview to such aspects of the subject as are of real practical importance. Before entering upon the matters which are to occupy our attention, let me, by way of short preamble, mention how deeply ingrained upon every literature are references to the movements of the heart. Looking back into the past, frequent references to this subject are to be found in the great epic of Homer.[2] They are to be seen in the philosophic pages of Lucretius[3] and the classic lines of Horace[4]; they are to be read in the prophecies of Isaiah[5] as in the plays of Shakespeare.[6] The movements of the heart thus appreciated by the individual have therefore given a very large amount of imagery to the poetry of all time. It is, nevertheless, quite beyond doubt that the thorough study of this subject is of comparatively recent date. It must, however, be admitted that the pulse underwent a very careful analysis in a comparatively early age. Aristotle[7] discovered the pulse to be simultaneous; Herophilus[8] found that the pulse and heart beat were synchronous; Rufus of Ephesus[9] gave a very excellent clinical analysis of different kinds of pulsation; yet from the days of Galen,[10] who wrote seven treatises upon the pulse, down to the time of William Harvey,[11] there was no alteration in the teaching as regards it. During even more recent times there must have been no consideration at all of motor disturbances, for, until the publication of the magnificent work of Senac, in the first half of the eighteenth century, little notice was given to the subject. In that work there is a very fair discussion of palpitation and of syncope[1]; that is practically the earliest of the scientific attempts to make out changes in the action of the heart. Morgagni,[2] who followed shortly afterwards with his monumental work, gave a whole epistle—the twenty-third—to palpitation and heart pain, to which there will be occasion to refer later. In that epistle he advanced still further in the analysis of motor disturbances. Even when we take up the work of Laennec,[3] we find how very little attention was devoted to this subject, and it is only in the days of Walshe[4] and Stokes[5] and their successors that the consideration of this subject had an effective commencement.

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[1] "The Morison Lectures," delivered before the Royal College of Physicians of Edinburgh, March 2, 4, and 6, 1903.

[2] "Iliad," Book I. v. 225.

[3] "De Rerum Natura," Book I. v. 922.

[4] "Odes," Book I. Od. 23, v. 8.

[5] Chap. ix. v. 9.

[6] *King Lear*, Act II. Sc. iv. v. 163.

[7] "On the Parts of Animals," trans. by Ogle, 1882, p. 205.

[8] Trans. by Daremberg, *Rev. scient.*, Paris, 1881, tome i. p. 12.

[9] Trans. by Daremberg and Ruelle, 1897, p. 219.

[10] "Opera omnia," 1542, tom. i. p. 823, etc.

[11] "Exercitatio anatomica," 1628, p. 24.

Before we enter upon any of the disturbances, it is advisable very briefly to refer to some preliminary matters. It is unnecessary to make any remarks upon the innervation of the heart. This was thoroughly described last winter from all points of view; there are, however, a few other subjects that must be recalled to your recollection to-day. The first matter arresting our attention is connected with the cause of the cardiac movements. These were originally considered by Haller[6] to be automatic, and due to an inherent power of contraction belonging to the heart itself; this view was also held by Senac,[7] although he modified it in regard to the external sources of interference. When Remak[8] discovered the ganglia at the junction of the sinus and of the auricle, Bidder[9] those between the auricle and the ventricle, and Ludwig[10] those between the two ventricles, other views prevailed, and Rosenthal[11] formulated the theory that the heart's beat was due to an automatic action on the part of the intrinsic ganglia of the heart, and not to the muscle itself. With the progress of time these views were modified. The observations of Eckhard,[12] and Foster and Dew Smith,[13] upon the various effects produced by experiments on the ganglion-free apex, and the further investigations of Bowditch[14] and Merunowicz,[15] on the same part with nutrient fluids, altered our conceptions. The result of these observations was the theory that continuous impulses flowed from the ganglia in the sinus, and produced the rhythmic action of the heart. Gaskell's experiments showed that each part of the heart has a rhythm of its own,[1] and that the special rhythm of each part is due to a morphological difference in structure. Engelmann[2] found the ganglion-free veins to be the starting-point of the cardiac movements, and we have therefore come back once more to the conception that the movements of the heart are due to its own inherent automatic peculiarities. But we know that these movements of the heart are under the domination of the nervous system from outside. These very ganglia that have been referred, to are now known to be simply the outlying or peripheral ganglia of the efferent cardiac fibres of the vagus nerve. They can interfere with the cardiac action in various ways, but never originate it.

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[1] "Traité du Cœur," 1749, tome ii. p. 481.

[2] "De Sedibus et Causis Morborum," 1761, tom. i. p. 235.

[3] "Diseases of the Chest and Mediate Auscultation," trans. by Forbes, 1834, p. 655.

[4] "Diseases of the Lungs and Heart," 1851, p. 426.

[5] "Diseases of the Heart," 1854, p. 492.

[6] "Elementa Physiologiæ," 1757, vol. i. p. 430.

[7] *Op. cit.*, tom. i. p. 329.

[8] *Arch. f. Anat., Phys. u. wiss. Med.*, 1848, S. 139.

[9] *Ibid.*, 1852, S. 172.

[10] *Ibid.*, 1848, S. 139.

[11] "Bemerkungen u. d. Thätigkeit d. automat. Nervencentra.," 1875, S. 1.

[12] *Beitr. z. Anat. u. Physiol.*, 1858, S. 145.

[13] *Journ. Anat. and Physiol.*, 1876, p. 735.

[14] *Ber. d. k. Sächs. Gesellsch. d. Wissensch. z. Leipzig*, 1871, S. 682.

[15] *Ibid.*, 1875, S. 254.

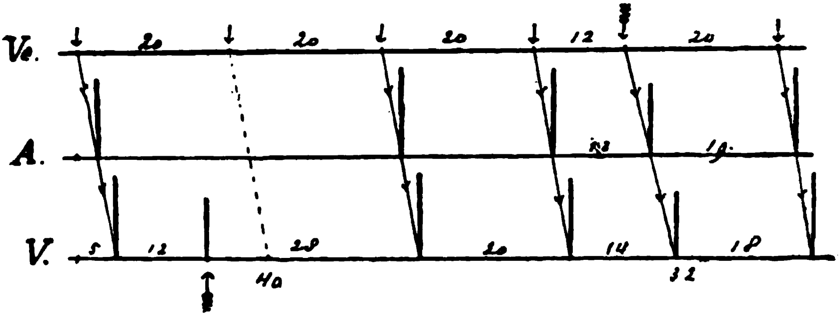

FIG. 1.—Scheme of pulsation of vena cava, auricle, and ventricle. For description see text.

In recent times there have been some interesting and important observations on the ways by which the rate and rhythm of the heart may be modified. Amongst the observations to which reference must be made are those of Wenckebach[3] and Cushny.[4] But it is only right to say that, antecedent to their observations, Mackenzie[5] had come to exactly the same conclusion. Wenckebach points out that the results of stimuli depend upon the region acted upon and the time of the stimulation. The accompanying scheme shows the rhythm of the great veins entering the sinus, of the auricle, and of the ventricle; in it each beat is normally separated from the succeeding beat by a space equivalent to 20 units of time. If the ventricle is stimulated electrically as at the arrow below, it contracts before its time, but there is not the very least interference with the subsequent rhythm. The sole result is that the ventricle does not again contract during that cycle, but the succeeding pulsation takes place exactly 40 units of time after the original pulsation. On the other hand, if any impulse is applied to the sinus as at the arrow above, at a shorter period of time than the 20 units, contraction takes place, and it at once is carried from the sinus to the auricle and on to the ventricle, so that there is a shortening of this period; the subsequent period, however, returning to the normal.

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[1] *Journ. Physiol.*, 1883, p. 43.

[2] *Arch. f. d. ges. Physiol.*, 1896, S. 109.

[3] *Ztschr. f. klin. Med.*, 1899, Bd. xxxvi. S. 181; 1899, Bd. xxxvii. S. 475; 1900, Bd. xxxix. S. 293; and reprint from *Tr. K. Akad. v. Wetensch. te Amsterdam*, 1903, p. 2.

[4] *Journ. Exper. Med.*, 1899, p. 327.

[5] *Journ. Path. and Bacteriol.*, 1894, p. 314.

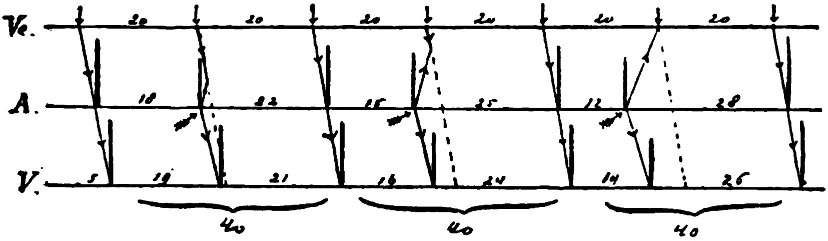

FIG. 2.—Scheme of pulsation of vena cava, auricle, and ventricle. For description see text.

The next figure is intended to show that so long as the pulsation of the sinus itself is not interfered with, the rhythm persists; when a stimulus is applied to the auricle just a very short time before it would be stimulated by the impulse which comes down from the sinus, it causes the auricle to beat slightly before its right time, 18 units instead of 20, and the ventricle also slightly before, 19 instead of 20. But the next succeeding phase occurs exactly after the lapse of 20 units. When the auricle is stimulated a little earlier, if the stimulus does nothing more than intercept the downward passage of the impulse from the sinus, there is no interference with the subsequent movements, and the same thing when it is so early as 12 units instead of 20 after the previous beat—so long as the movement does not come before the normal time of contraction of the sinus.

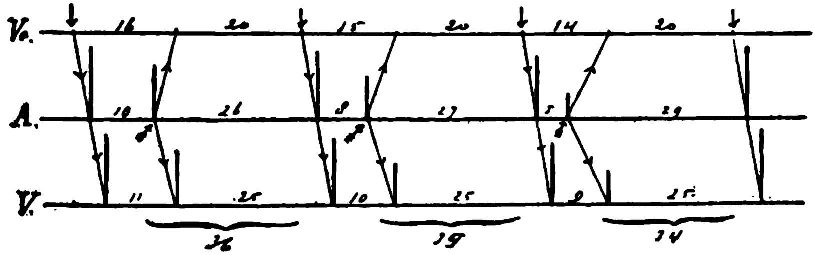

FIG. 3.—Scheme of pulsation of vena cava, auricle, and ventricle. For description see text.

If, however, there should happen to be a stimulus, as in Fig. 3, which takes place at an earlier period, so that it can travel up, and not merely intercept but occur before the contraction of the sinus, then the whole phase comes to be considerably shorter. A stimulus after 16 units, followed by the normal 20, gives in all 36 instead of 40 units for the two cycles; and in the same way, if after 15 units, the result of two cycles is 35 units; and, after 14 units, it is 34.

It is clear that if any stimulus occurs, as soon as the refractory period has come to an end, there is a considerable shortening of the phase of contraction.

The observations of Cushny are of much interest in this connection. The accompanying diagram is a tracing taken from his work. In it there is a tracing of the radial pulse below, and curves of the pulsation of the auricle and ventricle above. Unfortunately the auricular and ventricular curves are to be read from above downwards—the downstroke is contraction in each case. Now, when a stimulus is applied to the ventricle just before the time when it ought to contract, it does contract, but it contracts feebly, as at *c*, in Fig. 4. It produces no effect upon the auricle whatsoever, but it causes the drop of a beat of the radial pulse. The next figure shows a different state of matters, because here the stimulus was applied to the auricle before its normal time of contraction. There was therefore a short ineffective auricular pulsation followed by a short ventricular pulsation, and the result was the missing of a radial beat. We learn from these observations,

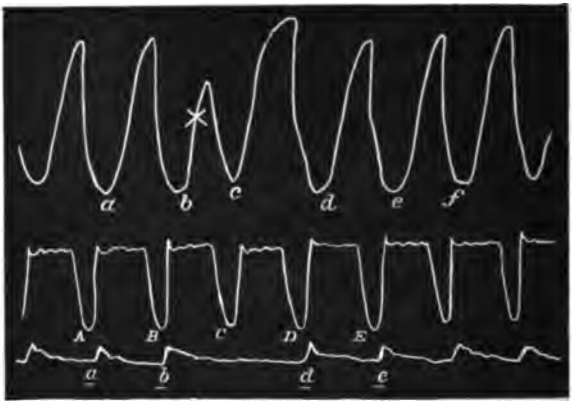

FIG. 4.—The upper tracing was drawn by the ventricle, the next by the auricle, the third by a sphygmograph attached to the carotid artery. During systole the auricular and ventricular levers made a stroke downwards. During diastole they rose again. Stimulation applied to the ventricle at × causes a premature systole of the ventricle, and a missed beat in the carotid, but has no effect upon the auricular rhythm.

that if any stimulus is applied to the heart before the normal time, the premature systole—the early occurring imperfect systole of Mackenzie—takes place, and that it causes a considerable interference with the action of the heart. What that interference is we shall see more clearly in the next lecture, because it is the cause of many forms of irregularity which must then be considered. The changes in the rate of the action of the heart constitute the subject which is to concern us for the most part to-day. The changes are twofold: the rate may be accelerated or it may be retarded. As retardation is the easier to grasp, we shall deal with it in the first place. Here perhaps you will allow me to say, parenthetically, that the term slow pulse, often applied to this condition, is objectionable. It is a misuse of the word slow, just as it is a misnomer to speak of a quick when a frequent pulse is meant. It is a total misapprehension of phraseology. If a man crosses the street quickly, it does not mean that he crosses the street often; thus you get the exact meaning of what quick and frequent imply. Unfortunately, even in the most recent works upon the pulse, this error is perpetuated. It may be pedantic to stand out for purity of phraseology, but, at any rate, my conscience will feel clearer after this expression of my opinion on the subject. Diminished frequency of the heart's action is commonly called bradycardia. Clifford Allbutt,[1] in his observations upon functional disorders of the heart in his text-book of medicine, falls foul of this word bradycardia, but he allows that tachycardia is a valid term to employ. It is difficult to understand what he means by this.

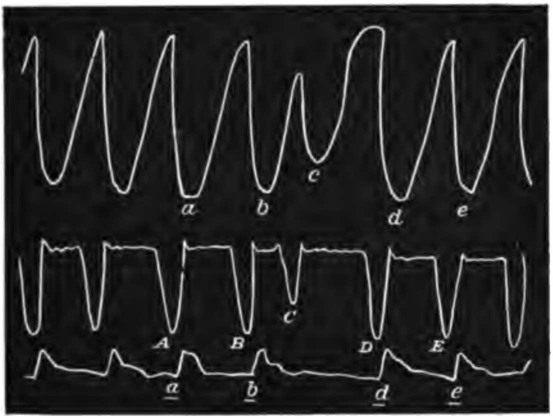

FIG. 5.—Inscribed in the same way as Fig. 4. The electric stimulus was applied to the auricle, and there results a premature systole of the auricle, followed by a premature systole of the ventricle, while the beat is absent from the carotid.

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[1] "A System of Medicine," 1898, vol. v. p. 832.

Bradycardia is as much a fact as the opposite condition—this, however, by the way. Bradycardia is sometimes a constitutional peculiarity; we find in almost every work that touches upon this subject, reference to the well-known fact that the great Napoleon exhibited the features of bradycardia almost all his life. His pulse had a rate of forty beats per minute, with almost unvarying regularity. It is to be remarked that, as Balfour[1] points out, Napoleon was an epileptic; we know that epilepsy and bradycardia are often associated together. A personal peculiarity, then, is sufficient to give a pulse of very greatly diminished frequency. In addition to idiosyncrasy, infrequency of the pulse may be produced by various stimulations of the inhibitory mechanism, and infrequency of the pulse is very commonly produced in this way by vagal influence. By inhibiting the contraction of the sinus and auricle, such agencies necessarily set the pace for the rest of the heart. These various disturbances may be produced by direct or indirect irritation of the vagus; it is, however, no part of my present intention to-day to analyse with pitiless iteration the various causes which may lead to direct and indirect interference. Suffice it to say that the vagus may be directly interfered with by any cause which presses downwards upon the base of the skull, interfering with the vagal region. This is well illustrated in many a case of increased intracranial pressure. It may further be interfered with by direct pressure on the trunk of the vagus nerve itself, containing as it does accessory fibres, and Czermak is well known[2] to have had the power to press his vagus back upon the cervical vertebræ, thus stopping his heart entirely, or regulating its rate, as he liked. Let me say, further, that it seems almost undoubted, that, by the influence of the will, this may sometimes be done. Colonel Townsend, who is described in Cheyne's work,[3] had apparently the power at will of retarding or accelerating his pulse rate; while it is undoubted that Indian fakirs may send themselves to sleep for long periods,[4] and allow themselves to be immured in sepulchres, from which they are afterwards disinterred but little the worse for the experience —they seemingly possess the same faculty. Indirectly, anything which acts upon the vagus mechanism may produce this retardation; and hepatic, gastric, renal, and even more distant causes of irritation, acting reflexly through the vagus system, may interfere with the normal rate of the heart and reduce it.

Toxic agents must be referred to briefly. There are many such toxic agents. We shall see further on Wednesday that tobacco is one of the most powerful substances that exercise a malign influence over the heart, that is not infrequently shown by a diminution of its rate. Other toxic chemical agents and microbic influences exert similar power, and by acting on the heart itself, or upon the inhibitory mechanism, or upon both, diminish the frequency of the pulsations. Weakness of the cardiac muscle is not at all uncommon, such as follows acute febrile disturbances, as in diphtheria and influenza. Both of these diseases frequently leave as a sequel considerable reduction in the rate of the heart; this is not so much by means of vagus influence as by direct action upon the muscle of the heart itself, because the force of the pulse is much more modified than would happen if mere vagus influence were solely at work. And there is one other important point. Any increase in the resistance which the blood experiences on leaving the heart tends to reduce its frequency of action; and it is a pleasant duty to pay a tribute to M'William, whose researches are the most convincing, the most thorough, and the most satisfactory we have ever had upon this subject.[1] Those researches prove to us that when there is any increase of the outflow from the heart, the organ is of necessity diminished in its frequency of action. This is quite in accordance with clinical experience, because it is well known that if there is increase of blood pressure, the heart is invariably diminished in frequency. These are, without dwelling too long upon them, the most important of the causes which lead to diminution of the frequency of the action of the heart.

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[1] "The Senile Heart," 1894, p. 95.

[2] Schmidt's *Jahrb.*, 1868, S. 273.

[3] "The English Malady," 1733, p. 307.

[4] Braid, "Observations on Trance, 1851, p. 9.

A reduction of the rate sometimes shows itself by no symptom except the fact that the pulse is much less frequent—that is to say, there is a total latency of the symptoms, while the diminution of the rate often manifests itself in a pulse which is absolutely regular. Occasionally, however, we find a considerable irregularity of pulsation. From the comparison of heart beat and of pulse wave, it is sometimes possible to come to a correct conclusion as to the cause of the infrequency. It may be produced in one or other of two ways. There may simply be a greatly prolonged period of repose, or the effective systole of the heart may be followed by one or more abortive and almost inappreciable pulsations, *i.e.*, some of the beats do not produce an appreciable pulse-wave. When there is great diminution, there are usually disturbances elsewhere, and these are generally of nervous nature, often associated with the ordinary symptoms and signs of cardiac weakness. These nervous disturbances may be of the character of faintness; and if the diminution of the frequency should lead to syncope, naturally the faintness and giddiness may become extreme. Along with this, or sometimes instead of it, there are motor disturbances of the whole of the muscular system—in a word, convulsive attacks. These attacks will be referred to in a few minutes more distinctly, and their explanation will then be attempted. Besides such changes as those, it is not uncommon to find that there are mental disturbances. There may be various illusional or delusional changes in cerebral activity. The most important symptoms nevertheless are to be found in the consideration of the heart beat and the pulse wave.

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[1] *Proc. Roy. Soc. London*, 1893, p. 469.

When such a condition as bradycardia is found, it is necessary to find out what is its cause; if it is due simply to increased inhibition, it may be removed by appropriate remedies. Such drugs as belladonna or atropine, and the bromides or hydrobromic acid, are the most important for this purpose. If, instead of increased inhibitory influence, there should happen to be toxic effects, these must be as far as possible eliminated. It is sometimes extremely difficult to eliminate a toxine. My own personal experience is, that in the case of tobacco, for example, it takes a good six months' abstinence from that weed before its malign influence on the heart begins to disappear, while it often takes six months more before the influence has entirely disappeared. There will be occasion to say a few words in the next lecture as to different kinds of tobacco and their action on the heart, and to attempt to reach the real reason why tobacco interferes both with the rate and rhythm of the heart. Other toxic agents take a shorter time, but, from the intimate chemical union between nicotine and the nerves of the heart, it is difficult to remove its influence entirely. When we come to such conditions as weakness of the heart after influenza or diphtheria, it is necessary to bear in mind that we have primarily to restore the energy of the heart; and when there is increased resistance to the outflow, it is advisable to lessen it by drugs that will lower the arterial pressure.

There is one special form of bradycardia to which reference must now be made, that is, paroxysmal bradycardia. This has of late years obtained a considerable amount of attention; by the term intermittent or paroxysmal bradycardia is meant a recurrence of greatly diminished frequency of the heart's action. Verily, there is no new thing under the sun. We had, until recently, thought that this condition was first described by Adams[1] of Dublin, and further elucidated by Stokes[2] of the same great school, but, in the pages of Morgagni, two beautiful instances of it attract attention[3]: a grave and honourable clergyman, named Anastasio Poggio, and a certain merchant of Padua, being graphically described as victims of this condition. Burnett[4] and Holberton,[5] moreover, published instances of the affection. Since the observations of Adams and of Stokes, this symptom has been frequently discussed, and Huchard[6] has proposed to term it the Stokes-Adams disease. It is not a disease but a symptom, and it would be better called the Stokes-Adams syndrome. It consists in sudden accesses of greatly diminished frequency of the pulse, attended by intellectual and muscular troubles. Occasionally it is only syncope that takes place, sometimes it is an epileptic attack. During the last two months some interesting experiences have been allowed me with regard to this affection, since no less than three cases—one in England and two in or near our own city—have been under my observation. It is necessary to explain, if possible, how it is produced. In the very latest work upon these nervous disturbances of the heart, this affection is described by Krehl,[1] who explains it as the result of sclerosis of the coronary arteries. Now the explanation of Krehl is undoubtedly erroneous. There can be no doubt it is due to sclerosis of the cerebral vessels, as is believed by Huchard.[2] The very interesting observations of Webster[3] are in themselves quite enough to disprove the explanation of Krehl. In the tracings which accompany his work, there are no premature or abortive systoles during the period of bradycardia, and if the condition were due to cardiac causes, such would certainly be seen. When we analyse the onset of this symptom, we find that the patient has usually been undergoing some stress leading to strain. Sometimes it may be a slight intellectual stress, as writing a business letter; at other times a physical exertion, such as flying after a tramway car. It seems to me that the probable explanation is this:—in sclerosis of the cerebral vessels, whenever there is any stress put upon the circulation, the blood supply to the brain is inadequate and ineffective. There is, as a result of that deficient supply, a condition of irritable weakness of the inhibitory mechanism; impulses are sent down to the heart; it is inhibited, and the features of the attack are found.

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[1] *Dub. Hosp. Rep.*, 1827, p. 448.

[2] *Op. cit.*, p. 302.

[3] *Op. cit.*, tom. i. p. 70, and tom. ii. p. 420.

[4] *Med.-Chir. Trans.*, 1827, p. 202.

[5] *Ibid.*, 1841, p. 76.

[6] "Traité clinique des Maladies du Cœur," 2nd edition, 1893, p. 309.

One interesting point deserving of consideration is the matter urged by Tripier.[4] This author believes that the epileptiform movements precede the infrequency of the pulse, and seems to consider them as the cause of the bradycardia. His views have been stoutly combated by Broadbent,[5] and in the last two years they have received the *coup de grace* at the hands of Webster,[6] whose tracings show clearly that the changes in the action of the heart precede the epileptiform attacks.[7]

As regards the practical subject of treatment, there can be no doubt that rest is the most important therapeutic agent. Due attention to the digestive processes is also a matter of real value. Of drugs, so far as my own experience allows me to judge, the most useful are the iodides or hydriodic acid to restore a healthy state to the vessels; nitroglycerin or some other nitrite, if there be any tendency to vascular spasm; and belladonna or the bromides, for the purpose of lessening the action of the vagus.

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[1] Nothnagel's "Specielle Pathologie u. Therapie," 1901, Bd. xv. S. 352.

[2] *Op. cit.*, p. 322.

[3] *Glasg. Hosp. Rep.*, 1901, p. 413.

[4] *Rev. de méd.*, 1883, p. 1001.

[5] "The Pulse," 1890, p. 120.

[6] *Loc. cit.*

[7] In the interesting observations of Kussmaul and Tenner ("Epileptiform Convulsions from Hæmorrhage," trans. by Bronner, *New Syd. Soc. Translation*, 1859, p. 7), compression of the carotid arteries is shown to produce convulsions.

Turning, in the next place, to increased frequency, or tachycardia, this is sometimes due to personal peculiarities on the part of the patient. There are many individuals in whom the pulse is never below 100. One such patient always occurs to me when thinking of this subject, an Edinburgh shopkeeper known to me for many years, whose pulse has almost never been under 120. He suffers, along with this tachycardia, from agoraphobia. If he finds himself in a large space, like the Grassmarket, he gets into a state of panic, and is never comfortable until he has got into one of the wynds leading into that historic square. In such cases of personal peculiarity there are usually some mental symptoms, analogous to those attendant upon this case.

Diminished inhibitory influence is the commonest cause of tachycardia. This may be induced by pyrexia; by heat, internal as well as external; by poisons of the type of alcohol, belladonna, and tobacco (though tobacco usually diminishes the heart's frequency, it sometimes increases it); by toxines, such as those of influenza and diphtheria; by organic secretions, as of the thyroid gland, seen in exophthalmic goitre and in artificial thyroidism; mental emotion,and physical exertion—all these causes,by throwing the inhibitory mechanism out of action, cause the heart to act with increased frequency. Increased accelerating influence is very much less certain, but there seems to be no good ground for doubting that, in many cases of pyrexia, this increased acceleration, due to the nervous system, is present—pyrexia; direct cardiac irritation (as in endocarditis, myocarditis, and pericarditis);—all of these are valid causes of increased frequency probably acting in this way. To these must be added cardiac strain, as seen in the irritable heart of soldiers, studied by Clifford Allbutt,[1] Da Costa,[2] and others. Spinal lesions, especially concussion of the lower cervical and upper dorsal region, will produce similar effects—a patient who was first under the care of Dr. Elder, in Leith Hospital, and afterwards of myself, in the Royal Infirmary, showed this most beautifully. He had, so far as we could make out, a concussion, and there was such a state of instability when he walked a few steps, that he had a tremendous acceleration of the rate of the heart.[3] Reflex influence, lastly, will also set up a great increase in the rate of the pulse, as is often seen in cases of renal mobility.

Tachycardia depends, for the most part, upon a reduction of the diastolic phase. There can be but little doubt that this increased frequency in tachycardia is probably produced, as was suggested by Mackenzie,[1] and shown by Wenckebach[2] and Cushny,[3] by a stimulus which comes to the sinus or auricle before its right time; that is to say, that there is either a condition of irritability, or of diminution of control, which allows the normal stimulation of the heart to occur too soon.

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[1] *St. George's Hosp. Rep.*, 1870, p. 23.

[2] *Am. Journ. Med. Sc.*, 1871, p. 17.

[3] It may be well to add, injuries to the vertebræ in the cervical region usually produce retardation of the pulse. Cf. Hutchison, *Lond. Hosp. Rep.*, 1866, p. 366.

Sometimes there is absolute latency of the condition, at other times it is attended by subjective sensations and objective appearances. There may, for example, be palpitation, or even more pronounced sensori-motor disturbance, with physical signs of much cardiac derangement, while mental symptoms are far from uncommon.

In the treatment of tachycardia, removal of the causes weakening the vagus or irritating the heart must be the first indication. Physical and mental repose, with adequate nutrition, must be one of the chief aims. All gastric derangements, and other abdominal disturbances, must be obviated. If there be renal mobility, a bandage must be applied, or surgical measures adopted. Stimulants should be avoided; and the best remedies are to be found in digitalis, strophanthus, and nux vomica, with which may be associated one of the bromides, or hydrobromic acid, when it seems advisable.

It may, however, be absolutely latent. Nothing is experienced excepting by the observer, who makes out that there is increased frequency of heart beat and pulse wave; on the other hand, sometimes there are profound cardiac disturbances, and other nervous phenomena. In regard to tachycardia, in general, it is to be treated by getting rid of whatever may be its cause, and restoring the energy of the heart itself.

Lastly, a few words must be said about paroxysmal tachycardia. This complex of symptoms has been much studied since Cotton,[4] Edmunds[5] and Watson,[6] first described it. By the term is meant a recurrent paroxysm of increase in the rate of the pulse. The facts regarding the affection have recently been analysed very fully by Herringham.[7] It is far more common in middle age and after it, but it sometimes occurs in youth; it has even been known in childhood. Its causation is a matter of great difficulty. At present there is no particular view to account for it; but undeniably it must be due, at least in part, to a loss of vagus influence, perhaps also to an increase of the augmentor influence. In another place, a possible analogy to periodic respiration has been suggested by me,[8]—a paroxysmal variation in the functional activity of the cardiac mechanism. Six post-mortem examinations have been made on cases of the affection. Three showed dilatation of the heart, two had interstitial myocarditis, and one revealed fatty degeneration; with these few facts in regard to the morbid anatomy of this affection, we are left to speculate as to its cause.

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[1] *Loc. cit.* [2] *Loc. cit.* [3] *Loc. cit.*

[4] *Brit. Med. Journ.*, 1867, vol. i. p. 629; and 1869, vol. ii. p. 4.

[5] *Ibid.*, 1867, vol. i. p. 721. [6] *Ibid.*, 1867, vol. i. p. 752.

[7] *Edin. Med. Journ.*, 1897, p. 366.

[8] "Diseases of the Heart and Aorta," 1898, p. 804.

The essential features of the affection centre in the increased rate of the heart, which is often far above 200 per minute. Tracings of the radial pulse show the condition to depend upon the presence of premature systoles. It may be practically latent, but has sometimes subjective disturbance, while the heart is usually found to be enlarged and its force diminished. Evidence of valvular disease is occasionally present, while secondary symptoms in other organs may be discovered. In attempting to remedy the condition, the same lines must be followed as for tachycardia in general; but the study of posture and the use of a well-fitting bandage may be recommended. In my own experience of this affection, the adoption of respiratory exercises has been productive of much benefit in a few cases.

REVIEWS OF
BRITISH AND FOREIGN LITERATURE.

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On Granular Kidney and Physiological Albuminuria, being the Lettsomian Lectures delivered before the Medical Society of London. By SAMUEL WEST, M.D. London: Henry J. Glaisher.

THE advantages and disadvantages of published lectures are seen in this work. The disadvantages are, that the lectures being addressed to a medical audience, a considerable acquaintance with the disease on the part of the hearers is taken for granted, and consequently certain branches of the subject are touched on but lightly, or not at all. There is not in this book any complete account of the morbid anatomy, of the condition of the urine, or of the differential diagnosis of granular kidney. To a certain extent, these omissions are compensated for by the large number of illustrative cases, some of which are scattered through the book to exemplify special points, and others are grouped together in an appendix. The advantages of the lecture form are seen in the full and critical manner in which special points of interest or dispute are treated.

Under the term granular kidney, Dr. West recognises a definite disease, which is to be distinguished from the gouty or senile kidney, and from that form of renal degeneration associated with advanced atheromatous disease, in which, although there may be interstitial changes, the post-mortem appearances and the clinical course are different. He does not believe that granular kidney is ever the result of acute nephritis, and is rather inclined to suggest that acute nephritis in an adult is usually the result of granular kidney. As regards the immediate and exciting cause, the author is indefinite. Reasoning from analogy, he considers that probably there is some irritant in the blood, like alcohol in the production of hepatic cirrhosis, but he is not prepared to recognise in gout the presence of an irritant which may produce this form of renal cirrhosis. The hazy state of our knowledge of the pathology of gout and of granular kidney is somewhat painfully manifested in the following sentence:—"In the one case, an elderly person who has long suffered from gout may as a consequence develop atheromatous changes in his vessels, which may lead to interstitial changes in the kidneys; while a younger person with granular kidney may develop gout, in consequence of the renal disease."

The larger part of the book is taken up with the signs and symptoms of granular kidney, and while some of these are described and discussed very fully, others are very briefly referred to. Great stress is laid on a high tension pulse as an early sign of granular kidney, and the author is inclined to believe that the vast majority of cases in which the arterial tension is high during early life will be found to terminate in this disease. What medical man, verging on forty, as he feels a slightly increased tension in his own pulse, does not anticipate a similar end, but not always correctly? The chapter on physiological albuminuria does not add much to our knowledge, and its bearing on the subject of granular kidney is not quite clear. One of the most interesting and most complete sections is that on albuminuric retinitis, where the author draws a distinction between the exudative form associated with parenchymatous nephritis, and the degenerative form associated with granular kidney. Various types of skin eruption are described, which occur late in the course of this disease, and are therefore of great prognostic value. As regards treatment, the directions given are very complete and precise, and special emphasis is laid on the value of nitrate of pilocarpine and renal extract, which are most useful when combined.

This book is not a compilation, but is the result of the author's own experience and study of the subject. Perhaps Dr. West sees granular kidney where others would not see it, and some of his clinical cases do not seem to afford a sufficient basis for the diagnosis of that affection. Perhaps, also, he lays too little stress on the mixed forms of renal disease, where the average clinician has a difficulty in determining the predominant lesion, but where Dr. West would at once recognise granular kidney with some complication. Although the author has not added much to our knowledge of this important subject, he has given an account of granular kidney which may be studied with profit by all medical men. G. A. SUTHERLAND.

Death and Sudden Death. By BROUARDEL and BENHAM. Second Edition. London: Baillière, Tindall, & Cox.

SOME years ago we welcomed the translation of Brouardel's fascinating lectures on the above subject. The translation was well done, and if it failed to reproduce the incisiveness and delightful style of Brouardel, one was willing to overlook this fact in return for Dr. Benham bringing such a suggestive and interesting book within the reading of all. The translator's notes to the first edition, even although they did not add to the value of the book, were harmless.

In the present edition, however, to our utter amazement, we notice that it is no longer Brouardel on "Death and Sudden Death," but "Brouardel *and Benham*"! What a combination! What delicacy and humility on the part of the translator! We sympathise with Brouardel. A more uncalled for and unjustifiable attempt to shine by the reflected light of another's greatness we do not remember to have come across.

Brouardel's lectures, written in easy and clear language, not too scientific, and yet forming an admirable introduction to the study of forensic medicine, for the students to whom they were addressed, and full of suggestion to every medical man, have been considered by the translator, Dr. Benham, capable "of amplification, both by extending the range of the subject matter and by adding further illustration, detail, and comments." As if Brouardel, one of the most distinguished medical jurists of the present time, was not a fit judge of what his lectures ought to be!

One might perhaps have found some excuse for the translator's attempted improvement of Brouardel, had his "further illustration, detail, and comments" added anything of value to our knowledge from any experience he had himself acquired. But his "further illustrations," etc., have been, for the most part, culled from books, which must be well known to those taking any interest in the subject, and which one may, with almost absolute certainty, affirm are not unknown even to Brouardel, and would have been introduced by him in the lectures, had he thought it desirable to do so.

Some of the Benham additions are harmless enough, even although unnecessary, but the following (p. 53) "further illustration," "detail," or "comment," or whatever he likes to call it, is absolutely ridiculous, and its introduction betrays an ignorance of post-mortem phenomena which even a careful study of "Brouardel and Benham" might have prevented:—"Immediately after death the lungs contain very little blood, but by the time that an autopsy is usually made, several hours afterwards, blood has begun to accumulate therein and continues to increase for some time. This fact (*sic*) has, as far as I know, escaped observation until pointed out by Dr. C. Daniels of Georgetown, British Guiana. After having examined a large number of bodies, excluding cases of gross pulmonary disease, which would affect the result, he finds that the average weight of the two lungs in male adults is as follows:—(A table here states that the lungs gradually increase in weight from 17·6 oz. within three hours after death to 44·1 oz., over eighteen hours after death). This result is very striking. The increased weight is of course due to the presence of excess of fluid in the lungs, which the writer assigns to loss of elasticity in the pulmonary tissues."

Harvey Littlejohn.

A Practical Treatise on Diseases of the Skin, for the use of Students and Practitioners. By James Nevins Hyde, A.M., M.D., and Frank Hugh Montgomery, M.D., Rush Medical College, Chicago, etc. Sixth Edition. London: Henry Kimpton.

When a book has reached its sixth edition, and when the fifth has been exhausted in eighteen months, its reputation as a standard work must be regarded as established, and the duty of the critic is reduced to the examination of minor details. We recollect hearing the late Professor Syme observe, on introducing to his class a new edition of his "Principles of Surgery," that, unlike most volumes under similar circumstances, his, in place of enlarging in size with each revisal, grew steadily less. Authors as a rule deal tenderly with their literary offspring, and do not, as the celebrated surgeon referred to, largely practise excision on their productions, even where it might be done beneficially. The treatise before us is an exception, for, though well brought up to date, it falls short of its immediate predecessor by more than thirty pages, showing that judicious pruning has been resorted to. It does not lay claim to any special elegance of diction, but sets forth in a plain honest fashion a full and well-considered exposition of cutaneous diseases. Its bulk might, with no great loss, have been further reduced, were the account of the integumentary lesions of the exanthemata omitted, which, following the custom of several continental writers, are concisely described. We have read over many of the articles, and have found the characters of the ailment under consideration very thoroughly depicted, the diagnostic points emphasised, the pathology sketched as completely as is necessary for a practical guide, and the treatment copious enough in its suggestiveness to satisfy the most exacting, and to provide variety sufficient for all needs. We notice that the authors have fallen into a mistake, committed also by another writer of a treatise on the same subject, that of calling Hebra's tincture of green soap, "spiritus saponis alkalinus," instead of properly "spiritus saponatus kalinus." It is the spirit of potash as opposed to soda soap, not the spirit of alkaline soap, which certainly was not intended, even though at that time superfatted soaps were not dreamed of. There is at present a dead set against chemistry, as a subject of instruction during the medical curriculum; it is to be relegated to the same category, though not so absolutely banned, as Greek. Both are necessary, not merely for the due understanding of medical terms, but, without a fair acquaintance with chemistry, accurate prescription is impossible, and lazy recourse to the tabloid and pill and capsule method of medication will become more and more prevalent, to the destruction of individuality in ordering drugs in combination. We must say that nothing of this appears in Hyde and Montgomery; there are many valuable formulæ to be met with under every heading. A goodly number are original, those selected are tried and well established. Besides many woodcuts in the text, there are numerous plates; of the coloured ones, perhaps the best are those representing pityriasis rosea, purpura due to copaiba, and the prefungoid stage of mycosis fungoides. Those in black and white are so well selected that the absence of colour is scarcely missed, so correctly are the features brought out. We can recommend it as containing all the information necessary for the recognition and management of diseases of the skin. W. Allan Jamieson.

A Manual of Surgery for Students and Practitioners. By William Rose, M.B., B.S. (Lond.), F.R.C.S.; and Albert Carless, M.S. (Lond.), F.R.C.S. Fifth Edition. London: Baillière, Tindall, & Cox. 1902.

We need not do more than chronicle the appearance of the fifth edition of this popular work. The most important change in this issue is that the authors have deemed it "undesirable to perpetuate any longer the idea that the first and most important element in surgical practice is a knowledge of inflammation and its treatment," and have therefore removed the chapter on inflammation from its original position, and have given it a place secondary to that occupied by "Bacteriology and the Principles of Antiseptic and Aseptic Surgery." Several minor alterations and additions, calculated to bring the work up to date, have been made. Alexander Miles.

A Text-Book of Surgical Principles and Surgical Diseases of the Face, Mouth, and Jaws, for Dental Students. By H. HORACE GRANT, A.M., M.D., Louisville. Philadelphia and London: W. B. Saunders & Co. 1902.

"IT is the object of this work to present to the student of dentistry a text-book that will succinctly explain the principles of dental surgery applicable to all operative procedures, and also to discuss such surgical lesions as are likely to require diagnosis and perhaps treatment by the dentist." While we confess to some haziness as to "the principles of dental surgery applicable to all operative procedures," we fully recognise that the second object of the author is a useful and laudable one. We doubt, however, if he has succeeded in his endeavour. It is difficult to conceive any circumstances under which it would be the duty of the dentist to diagnose (and perhaps to treat) such conditions as varicose ulcers of the leg, moist gangrene, hydrophobia, foreign bodies in the eye, osteo-myelitis, and various other conditions described in this work.

We do not profess to be fully acquainted with the surgical requirements of dental students in America, but we know that, in this country, no examining board would be satisfied with the superficial knowledge likely to be acquired by a study of the work under review.

It is but fair to add, however, that the sections devoted to affections of the gums, jaws, and mouth are calculated to prove useful, and that the illustrations (mostly borrowed) are sufficiently striking to impress the mind of the reader. ALEXANDER MILES.

A Laboratory Hand-book of Urine Analysis aud Physiological Chemistry. By C. G. L. WOLF, B.A., M.D., Instructor in Physiological Chemistry, Cornell University Medical College, New York. Philadelphia and London: W. B. Saunders & Co.

THE object of this book is, according to its author, to supply students and practitioners of medicine with a suitable guide in matters dealing with chemical physiology. As a class-book for students it is not to be recommended, mainly for the reason that it is not suitably subdivided; and although it contains much that is useful for the practitioner to know, still it does not present the subject in a manner at all superior to innumerable other books dealing with the same department of medicine. There is a fair number of errors which might easily have been corrected, and which will be detected by any one who works with the book. There is a tendency to interpolate theoretical matter which does not bear directly on the rationale either of the qualitative tests or quantitative methods, and in a small practical book this ought to be avoided.

For these reasons the book cannot be specially recommended, although it undoubtedly contains much that is important.

T. H. MILROY.

Matière Médicale Zoologique. Histoire des Drogues d'Origine Animale. Par H. BEAUREGARD, Professeur à l'École Supérieure de Pharmacie de Paris. Revisé par M. COUTIÈRE. Paris: C. Naud.

THIS is an elaborate study of the animal materia medica by an author who was at once a pharmacist and a zoologist. Professor Beauregard unfortunately did not live to superintend the publication of his work, which has accordingly been undertaken by his colleague, M. Coutière. The author's intention was not to produce an elementary treatise, and still less a handbook, but rather to give to the world a comprehensive zoological and pharmaceutical study of all the animals which furnish articles of the materia medica. He thus deals with many aspects of the subject left untouched by other authors. Mammals, reptiles, fishes, crustaceans, insects, worms, and sponges are considered in succession in a series of monographs, which describe not only the medicinal products furnished by these animals, but give a full account of the natural history of each, together with an introductory sketch of the chief zoological characters of the great classes to which they belong. The letterpress is illustrated with photographs, anatomical drawings, and coloured plates, all of them beautifully executed. The author has bestowed on his work an elaborate and loving care, which has placed it on a much wider basis than the ordinary writings on materia medica, and which will make it for a long time to come a valuable book of reference on the subject.

RALPH STOCKMAN.

A Manual of Materia Medica and Pharmacology. By DAVID M. R. CULBRETH, Ph.G., M.D., Professor of Botany, Materia Medica, and Pharmacognosy in the Maryland College of Pharmacy, etc. Second Edition. London: Rebman Limited.

THIS is a book devoted almost entirely to materia medica and pharmacognosy, the remedial properties and uses of drugs being disposed of usually in a couple of short paragraphs, which consist of little more than a mere enumeration of symptoms and diseases. The author, in the preface, defines its object as being "to prepare students for the constant needs of the modern drug business, and to serve as a companion to the average pharmacist in his vocation." It is therefore primarily intended for druggists; but it contains a large store of accurate information regarding official and unofficial drugs, which should give it a high practical value for medical men also. The contents are arranged in five parts, comprising vegetable drugs, animal drugs, inorganic drugs, organic carbon compounds, and unofficial organic compounds, and including practically all substances in medicinal use at the present time. There are also short chapters on the use of the microscope in pharmacognosy, and on poisons and antidotes, besides several useful appendices and tables. The volume is profusely illustrated with woodcuts, which are well executed, and show the appearance and structure of the plants and substances described in the text. The work is a compendium rather than a treatise, and too high praise can scarcely be given to the thoroughness and accuracy shown in its compilation. A feature of the text is the care with which the derivation and significance of the Latin and popular names and synonyms have been given. The chemistry of drugs, their adulterations, and substances or plants allied to them in action, have also received brief but careful consideration. The book may be very cordially recommended to any one who wishes a reliable description of drugs in common use.

RALPH STOCKMAN.

Transactions of the American Dermatalogical Association at its Twenty-fourth Annual Meeting, held in Washington. Official Report. By Frank Hugh Montgomery, M.D., Secretary. Chicago: P. F. Pettibone & Co.

This volume contains an interesting collection of papers with the critical remarks of the members reproduced in full. To Bowen we owe a series of cases where dermatitis herpetiformis followed vaccination, while Wende directs attention to the link between hysteria, traumatism, and those curious eruptions described under different names, but for which he prefers that given by Duhring — dermatitis vesico-bullosa et gangrenoso mutilans. The contribution made by Morrow to the prophylaxis and control of leprosy is opportune. The difficulties of quarantine are taken up, and in view that the disease seems gaining ground in the United States, segregation combined with kindly management are suggested. Two instances of persistent exfoliation of the red portion of the lips, related by Stelwagon, led to an animated discussion which elicited varied opinions. Some regarded it as akin to seborrhœa, while others, from the occasional co-existence of lupus erythematosus, were inclined to class it with that affection. The malady is a notoriously refractory one, and the experience of Morrow may be worth citing. Some examples in his practice recovered when frictions with green soap were employed, followed by the application of a mixture of ung. hyd. nit. and zinc ointment. A general discussion on malignant diseases of the skin occupies a considerable space, and while what has been ascertained and accepted as to their nature and treatment is pretty fully summarised, yet nothing specially original accrued. The remaining pages are devoted to blastomycetic dermatitis, a subject on which the last word has not so far been said.

W. Allan Jamieson.

Handbuch der physikalischen Therapie. Herausgegeben von Dr. A. Goldscheider and Dr. Paul Jacob. Theil 1, Bd. i. Mit 69 Abbildungen. Leipzig: Georg Thieme.

The object of this handbook is to systematise our knowledge of the application of physical methods to the treatment of diseased conditions, and to make it available in convenient form for practitioners who are not specialists in the subjects. In the present volume, climate, high altitude, compressed air, inhalation methods, baths, sea air, and sea voyages, hydrotherapeutics, and heat, are all discussed at considerable length. The method of exposition is much the same in each case, a beginning being made with a historical introduction, which is followed by some discussion of the physiological problems involved. The modes of application, questions of dosage, and practical experience of the value of the methods, are then in turn all carefully considered in detail. The different subjects have been undertaken by different writers, or subdivided among two or three. The total result has been the gathering together of a large amount of information, but it does not make very lively reading.

Ralph Stockman.

Modern Surgery. By John B. Roberts, A.M., M.D. London: Rebman Limited.

This book, being a modern text-book of surgery, contains in the first pages a number of articles which might perhaps with advantage have been omitted, for example, the article on the "General Pathology of Tumours." In the bulk of the work the subject is, however, treated in a free, fresh, and unhesitating style. The article dealing with that difficult question, "Inflammation of Bone," fails, it seems to us, to convey to the reader the recent and accepted teaching, either as to the nature of the morbid processes that are induced, or as to the results likely to ensue with or without the surgeon's guidance and help. The operative procedures on the alimentary canal are up to date, but the newer treatment of that common condition—piles—is almost neglected, and so is the modern operation for opening the pleura in empyema. In the chapter on fractures, it may be noted that though many are well dealt with, yet a few are insufficiently considered, for instance, the more recent methods of dealing with fractures of the mandible. The author's teaching upon the administration of ether, and upon the usefulness of chloroform and gas, which he is inclined to disparage, displays, we venture to think, a want of appreciation of the many and well-established modern improvements in the technique of their administration. For this there is perhaps a good excuse, as ether, we must remember, was discovered by his own countrymen. On the whole there are many good articles in this work, and the illustrations, many of which are taken from European authors, are of a high standard. To British students the book can hardly be recommended, but to practitioners of surgery it will no doubt prove suggestive as well as instructive.

Joseph Griffiths.

NOTES ON BOOKS.

(1) *Handbook of the Open-Air Treatment and Life in an Open-Air Sanatorium*, by Drs. Reinhardt and David Thomson (Bale, Sons, & Danielson, Ltd., London, 1902); (2) *Selection of Consumptive Cases for Sanatorium Treatment*, by T. N. Kelynack (Scientific Press, London, 1902); (3) *La Prétuberculose et le Sanatorium de Banyuls-sur-Mer*, by M. Lafargue (Paris, Naud, 1902).

Number one, in a second edition, preaches clearly from the text: Tubercle is vincible; proceeds to describe sanatorial routine and benefits; and gives separate notices, of varying lengths, about all the numerous fresh-air institutions now carried on in the British Isles. Most interesting and instructive; sadly deficient in one important direction—information as to expenses incurred at each. Most properly, the very common custom in many of the foreign sanatoria, owing to their conduction as commercial speculations for the benefit of shareholders, of accepting healthy visitors as well as consumptives, and who object to fresh air and insist on closed windows if they are to remain, is strongly condemned. They might also have mentioned that, in many of the foreign sanatoria, all the windows of the dining-hall are closed during meals, thus transgressing the doctrine of fresh air at the only times of the day when all the patients are gathered together in close proximity in one apartment.

The title of Dr. Kelynack's pamphlet explains itself, and is a reprint from *The Hospital.*

M. Lafargue gives a very interesting account of the sanatorium founded by him at Banyuls-sur-Mer, in the Eastern Pyrenees, for the treatment of "pretubercular" (otherwise strumous) affections. The site of the sanatorium seems irreproachable; the results of treatment wonderful. The photographs of a girl, admitted a miserable strumous creature, dismissed after five years a well-formed woman, are significant.

Mattison egotistically styles his brochure *The Mattison Method in Morphinism* (Treat & Co., New York, 1902); describes his method as a modern and humane treatment of the morphina disease; and, lo! 'tis but our old friend sodium bromide, gradually increased in dose as the morphina gradually is decreased. For ten days or so is the bromide given; on occasion up to 100 grains twice daily. It is followed by codeina, associated with a medley of poisons symptomatically given, such as cocaina, hyoscina, hashisch, trional, trinitrin, heroin, etc.

The gradual diminution of the morphina, along with increasing doses of bromide (from 20 grs. to 200 grs. a day); a presumably sudden stoppage of the bromide; the substitution of codeina, 1 to 2 grs. every three or five hours for twelve days; and there is little wonder all manner of medicaments have to be called upon to quell exuberant sequelæ.

International Clinics, Twelfth Series, vols. ii. and iii. (Lippincott, London, 1902). The numbers of this series are always nice to look upon, pleasant to handle, clearly and well printed, beautifully illustrated, and certain to contain many articles of interest and value; but why so meagrely indexed? To attempt to do justice to all the various excellent papers making up these two volumes were, as invidious a task as apportioning praise or blame to the opinions given utterance to by different celebrities with regard to the recent Education Bill. Suffice it that a large majority of the articles come from authoritative sources, apply to important subjects, and are quite up to the standard which the former volumes of the series have led one to expect.

A very useful little book is *A Manual for Assistants' Examination, Apothecaries' Hall*, written by Miss Stanley, qualified dispenser of the Hall, not only for budding druggists, but for medical prescribers and dispensers also. A Manual of Materia Medica it is, viewed from the point of view of the pharmacist.

C. J. S. Thompson's *Aids to Practical Dispensing* (Baillière, Tindall, & Cox, 1902) is more strictly concerned with actual pharmacy: how, and how not, to do it; what, *and what it were better not*, to do.

Dr. W. Murray's *Rough Notes on Remedies* (H. K. Lewis, London) has attained to the honour of a fourth edition. The rough notes are mainly brusquely-stated arguments in support of the value of old time-honoured drugs *versus* pharmaceutical parvenus; with thoughtful, although somewhat everyday, dissertations upon the necessity for adapting medicinal methods and dosage to the circumstances of each case. 'Tis no new crusade; but, as the crusade is good, one cannot have too much of it.

RECENT ADVANCES IN MEDICAL SCIENCE.

MEDICINE.

UNDER THE CHARGE OF

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SPINAL NEURALGIA AS AN EARLY SYMPTOM OF TUBERCULOUS INFECTION.

PETRUSCHKY of Danzig (*München. med. Wchnschr.*, March 3, 1903) discusses the question of "spinalgia" in relation to tuberculous infection. The old argumentative strife between the upholders of hereditary transmission of the actual bacillary cause of tubercle, and those who maintained that inhalation of the *materies morbi* was necessary, has practically come to an end in the recognition of the facts that hereditary transmission is extremely rare, infection per os most usual. The route by which the bacilli reach their spheres of influence in the tissues afterwards remains, however, a matter of dispute and doubt. Petruschky regards the lymphatic system as the line along which the organisms pass, and the bronchial glands especially in cases of pulmonary tuberculosis. In phthisis pulmonalis he classes the infection of the bronchial glands as the primary, lung invasion as the secondary, and cavity formation as the tertiary, stage of pulmonary consumption. The observations of Birch-Hirschfeld upon primary bronchial ulceration contend against this view; but those of Ribbert, in which he found that there was in most cases of pulmonary phthisis a previous invasion of the bronchial glands, agree with the author's. Petruschky, indeed, thinks it probable that the seeds of the disease are sown in youth, and linger, for years it may be, in the lymphatic glands, before leading to actual pulmonary infection. He describes a case in point. An 8-year-old girl died of scarlet fever. Post-mortem, *inter alia*, the bronchial glands were found to be caseous in great part. The only other tuberculous lesion in the lungs consisted of a small cavity, not in communication with the bronchial system, containing a neurotic core, traversed by fibrinous bands, but not caseous, and full of readily stainable tubercle bacilli. During life there had been no signs nor symptoms of either tuberculosis or pulmonary disease.

"How do the tubercle bacilli first reach the bronchial glands, and from them, by the lymphatic vessels, contrary to their flow, into the lungs?"

By the leucocytes.

"When signs and symptoms of lung disease are absent, can one diagnose the presence of tuberculous disease in the bronchial glands?"

Yes, by the presence of "spinalgia"; that is, increased sensitiveness to pressure of a particular spinal vertebra, generally of one between the 2nd and 7th. The symptom is only of real diagnostic value if the difference between the affected spinal vertebra and its neighbours is distinctly marked.

From personal observation Petruschky declares that, although the symptoms seem to point distinctly to disease of the vertebræ, they may really be due to tuberculous affection of bronchial glands, not sufficiently advanced to give rise to evidences of pulmonary disorder. Testing in many such cases with tuberculin revealed the presence of tuberculous processes; out of seventy-nine, in only two was the reaction negative. In only fourteen of the remainder were sparse traces of lung affection found in the form of a few bacilli. Spinal caries were absent in all. Treatment with tuberculin sufficed in most of the cases to remove the symptoms. Various interesting corroborative and relative figures and observations follow.

THE EARLY DIAGNOSIS OF TUMOURS OF THE HYPOPHYSIS CEREBRI.

FUCHS (*Wien. klin. Wchnschr.*, 1903, No. 6) first opines that for the topical diagnosis of endocranial lesions, more especially of endocranial tumours, not only is a correct understanding of the local effects of the lesion necessary, but also a proper recognition of those changes which have brought about throughout the entire organism, indispensable. This necessity for regarding auxiliary facts and for carefully searching into the general symptoms afforded, is all the more pressing when the cerebral nerves themselves fail to give any token of disease, and still more when the brain substance itself is apparenty not affected, but one of its mysterious hangers-on.

Very important in this connection is the influence exerted by the hypophysis cerebri upon the bodily metabolism. Until quite recently all diseased conditions of this organ were regarded as equivalent to acromegaly. Various authors have written on the subject, to different effect; but it seems clear that, in the absence of acromegaly, disease of the pituitary body may give rise to other trophic and nutritional symptoms, such as rapidly developing adiposity, or changes in the skin closely resembling those in myxœdema; and that such symptoms, combined with more recondite signs of the presence of cerebral disease, may be held to suggest a lesion of the hypophysis cerebri.

SEA-SICKNESS.

BINZ (*Centralbl. f. innere Med.*, Leipzig, Feb. 28, 1903, sums up a paper on sea-sickness as follows:—(1) The movements of the ship occasion constriction of the arteries of the head and consequent anæmia of the brain. (2) This acute local anæmia causes here, as on other occasions, rapidly occurring nausea and vomiting. (3) The retching and vomiting called forth press more blood up to the brain, and in a short time relieve the cerebral anæmia, and remove the sense of nausea. (4) The stomach only plays a passive rôle. It is called upon from the central nervous system to act whether empty or full. (5) Everything that helps to facilitate the flow of blood to the brain, and to increase the same, acts prophylactically, mitigates or removes sea-sickness.

Aphasia in Acute Disease.

Aldrich (*Am. Journ. Med. Sc.*, Phila., March 1903) writes upon this interesting subject (more frequently met with perhaps in fiction than in fact) especially in connection with a case complicating smallpox.

Aphasia may temporarily occur in the course of many acute febrile infections—of the puerperal state, diabetes, nephritis, and gout, without any evidence of organic lesion. "These aphasias are undoubtedly due to the toxines engendered by the specific bacilli operating directly upon the cells of the cortex concerned in the production of articulate speech." General writers have noted its occurrence in typhoid, especially in children and most frequently in boys, although occasionally met with in adults. In acute pneumonia, also, aphasia is to be met with apart from any other cerebral sign of cranial lesion. In smallpox, aphasia has been previously noted, but Combemalo states that while paralytic disturbances of speech in smallpox are not uncommon, true verbal ataxia is rare.

Aldrich records a case of otherwise uncomplicated smallpox in a boy æt. 7 years. He spoke no word for three months after the fall of temperature and disappearance of acute symptoms. "He seemed to have forgotten all the language he had ever learned." In six months he had learnt to speak fluently again, and the classification of his aphasia remains doubtful; it certainly was not motor.

SURGERY.

UNDER THE CHARGE OF

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Hard and Soft Paraffin Injections.

Gersung (*Centralbl. f. Chir.*, Leipzig, 1903, No. 1) has recently made use of what he terms "soft paraffin injections" in certain cases where it has been desirable to imitate soft connective tissue, and where the injection of paraffin, such as he originally used, would have given a mass much harder than the tissue to be imitated. This soft injection is made up of four parts of olive oil to one of soft paraffin, by measure, and is so composed, in the hope that the olive oil will be gradually absorbed and leave small deposits of paraffin encapsuled in connective tissue; the final result being a mass of soft consistence. Gersung has used this injection with marked success in a case of hemiatrophy of the face, where there was great hollowing of the cheek, etc. The hollows on the affected side were obliterated by the injection, and the new tissue was found to correspond in consistence to the tissues on the sound side, while the play of the features was natural. This result was found unaltered many months after the injections had been made.

Depressed scars in the neck have also been raised to the level of the surrounding skin successfully in the same way.

In discussing the applications of paraffin injections generally, Gersung expresses himself decidedly in favour of the use of what he terms vaselin, *i.e.*, paraffin with a melting point between 35° and 40° C. in preference to "hard" paraffin with a melting point over 40° C. It is claimed by some that hard paraffin is preferable, because it sets more quickly and because with its use there is less danger of embolism. Gersung maintains that as the paraffin must be fluid while it is being injected, the danger of embolism is as great with a quick-setting as with a slow-setting paraffin. He further believes that the risk of embolism may be avoided if the following plan of injecting be adopted. A few drops of cocaine solution are first injected, and the syringe is then detached from the needle or the plunger withdrawn a little; if blood flows through the needle, the point is probably in a vein, and no paraffin should be injected till the needle has been reintroduced in another place; if no blood flows, the injection may safely be made.

While granting that in some few cases speedy hardening of the paraffin may be of advantage, Gersung says that he has not yet had occasion to use hard paraffin. The fear that a deposit of soft paraffin might melt, if a patient's temperature were to rise high, rests, he thinks, on a misconception. The ultimate result of injection of hard or soft paraffin is, he believes, the same, namely, a mass of cartilaginous hardness; but the paraffin does not remain a homogeneous mass, surrounded by a connective tissue capsule, it is divided up into numerous small nodules, by ingrowing connective tissue, and the ultimate hardness of the deposit depends on the firmness of this tissue and not on the paraffin itself.

OBSERVATIONS ON ACTINOMYCOSIS IN MAN.

VON BARAÇZ (*Arch. f. klin. Chir.*, Berlin, Bd. lxviii. Heft 4) records his observations on sixty cases of actinomycosis in man, seen during sixteen years. Many of the cases were of interest, as throwing light on the etiology, symptomatology, and treatment of the disease, and on the morphology of the ray fungus. The theory that infection takes place through carious teeth is rejected by the author. Thirteen of his cases showed that infection takes place through the buccal mucous membrane, just as in cattle whose teeth are always sound. Involvement of bone is always secondary, and is generally periosteal, rarely central. In the region of the upper jaw the superior maxilla is never attacked, while the malar bone is often involved. Disease in the neck is always due to extension from the mouth. The incubation period varies from two weeks to several months. In treating disease in the neck, where operation for any reason is undesirable, and as adjuncts to operation, injections of tincture of iodine or of a 20 per cent. solution of silver nitrate are highly recommended. The internal administration of iodide of potassium is of little or no advantage. In the tongue the disease may appear as a tumour the size of a bean or hazel-nut, sharply differentiated from the tongue substance, or it may give rise to a diffuse suppurative condition, causing difficulty in swallowing and speaking. The treatment consists in excision or incision and scraping. As a rule, the milder measures suffice to bring about a cure.

The lungs may be infected in two ways—primarily, by aspiration of infected particles of vegetable matter, generally grains of corn; or, secondarily, by extension of disease from the œsophagus. A primary focus in the œsophagus often escapes notice, because it gives rise to no symptoms during life, and in cases examined after death the initial lesion may have healed.

In the intestine, actinomycosis gives rise to very chronic inflammatory processes, leading sometimes to extensive tissue formation, at other times to extensive tissue destruction. The mucous membrane is first involved, ulceration follows, with spread to the submucous coat and eventually to the peritoneum. Clinically, abdominal actinomycosis may be divided into three stages—the initial latent stage, the stage of tumour formation, and the stage of fistula formation. Cases come for treatment most commonly in the third stage. The disease spreads by direct continuity or by the blood stream. The liver, the kidneys, and the lungs may be infected secondarily, and many cases present the clinical picture of a chronic pyæmia. Treatment is best carried out by exposing the foci of softening without attempting removal of tumours. Ordinary antiseptic measures bring about a cure, though operation has often to be repeated. For deep-seated foci, injections of iodine or solutions of silver salts may be used. Direct transference of actinomycosis from man to man, or from animals to man, and the reverse, may be considered as out of the question.

THE TREATMENT OF SARCOMA BY X-RAYS.

COLEY has recently treated fourteen cases of sarcoma, occurring in different parts of the body, by Röntgen rays. While admitting that the time which has elapsed is as yet too short to allow of a definite statement being made as to the value of the treatment, the author states tentatively that the rays have a remarkable inhibitory action on the growth of sarcomata, and that their action may result in the total disappearance of the tumour by absorption. Time alone can decide whether or not the cure is permanent, but the results he has obtained lead him to hope that more may yet be accomplished even in deep-seated abdominal and pelvic tumours. The Röntgen rays have a marked influence upon the pain, causing entire relief in the majority of cases.—*Med. News*, New York, September 20, 1902.

LUNG SURGERY.

ROCHELT comments (*Wien. klin. Wchnschr.*, No. 49, 1902) on the great increase in the number of lung cases which have been surgically treated within recent years. Thus in 1886 he was only able to collect twenty-six reported cases, while in 1897 Tuffier reported a collection of 306 cases of lung affections operated on.

A simple procedure, and one which promises good results, is the treatment of single tuberculous cavities by resection of the overlying rib or ribs, without opening the pleural cavity. One of the chief hindrances to the healing of tuberculous cavities is the rigidity of the upper thoracic wall, preventing contraction of the underlying lung; and the removal of two or more ribs over the cavity has often been followed by subsequent contraction and healing of the cavity. Rochelt quotes numerous cases from Bier, Landerer, and others, in which this operation has been followed by good results, and is of opinion that this "mobilisation of the thorax" should be more practised in the future in cases with definitely localised cavities.

The results of opening tuberculous cavities, on the other hand, are far from encouraging. The operation is almost never successful, though Rochelt considers that repeated severe hæmorrhage from a cavity may justify operation in some cases, in order to check the bleeding by ligature or tamponade. The results of surgical interference in cases of abscess of the lung are much more encouraging, and are such that, in the opinion of the author, every case should be treated surgically. The outlook in gangrene of the lung is less favourable, and the operative results in bronchiectasis are by no means good. Foreign bodies in the lung demand, according to Rochelt, operation only when they give rise to gangrene, bronchiectatic cavities, or profuse hæmorrhage.

The list of conditions subjected to surgical interference is completed by reference to a case of Karewski's, in which actinomycosis was cured by removal of a large portion of lung tissue with the Paquelin cautery.

ELECTRO-THERMIC HÆMOSTASIS IN ABDOMINAL AND PELVIC SURGERY.

IN the *Journ. Am. Med. Assoc.*, Chicago, of 12th July 1902, there appears a paper on this subject by Andrew J. Downes of Philadelphia. In a previous paper, the author considered the merits of this method of hæmostasis, and cited a few cases. He has since employed it in a greater variety of conditions, and considers that it can with advantage be substituted for the ligature, particularly in pelvic surgery.

Of the eighty-five cases in which he has employed the method, in forty-two he removed the appendix, in five hæmorrhoids, in one a rectal polypus, in one a submucous fibroid, and in the remainder the uterus or appendages. It is in this last variety of operations that the value of the method has been most prominent, it being possible to divide the broad ligaments or the pedicles of tumours without the loss of a single drop of blood. The procedure consists in clamping the tissue to be divided with an angiotribe, carefully packing round the blades with gauze, and then switching on a current of a known strength for a definite number of seconds, thus heating the blades of the instrument. On removal of the instrument, a ribbon-like scar is left, through which section is made. After removal of the appendix, the stump may be buried by a purse-string suture. In addition to the absence of bleeding, it is claimed that one obtains a certainly sterile stump, and that if the section be made through the middle of the scar made by the angiotribe, there can be no escape of contents from either end of the appendix or tube under treatment.

Further, by its use in cancer of the uterus, the effect of heat is obtained on the tissues adjacent to the line of division, which, according to Byrne, exerts a retarding influence on the disease in incomplete operations. Lastly, the author has arrived at the conclusion that there is much less pain after the use of this method of hæmostasis than after cases in which the ligature has been used, and has observed in three post-mortems that there is less liability to the formation of adhesions round the stump left by the former procedure. The instruments consist of clamp forceps of various sizes. The poles are attached either at the proximal end of a blade, or at the end of a handle, the conducting wire passing through to the blade.

The blades of the three sizes of instrument heat at a given amperage within 20, 15, and 10 seconds respectively, according to size. The proper heat to be attained is that which causes water placed on the blades to boil in five seconds.

OBSTETRICS AND GYNÆCOLOGY.

UNDER THE CHARGE OF

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PRIMARY CARCINOMA OF THE FALLOPIAN TUBE.

Graefe (*Centralbl. f. Gynäk.*, Leipzig, December 1902) refers to the first case demonstrated by Orthmann in 1888. Since then fifty-two cases have been published. Graefe's patient was æt. 51, never pregnant. She had profuse menstruation for nine months, and there was found a tumour the size of a fist behind a retroflected uterus. The patient was well eight months after operation. On opening the growth, there was found a papillary tumour the size of a horse-chestnut at the ampullary end of the tube. The malignant nature of the tumour was shown by the invasion of the tubal wall by epithelial elements. The serous covering of the tube was not involved, and there was no metastasis discovered.

THE LYMPH GLANDS IN UTERINE CANCER.

Gellhorn (*Am. Gynec.*, Phila., November 1902) has made an exhaustive study of the literature on this subject, in order, if possible, to decide the question of the necessity for extirpation of the pelvic glands, and parametrium. Involvement of the lymph glands, he finds, does not necessarily take place early. In about one-third of all cases the glands are affected. In cancer of the uterine body the tendency of the growth is to remain confined to the uterine cavity, and but slowly to penetrate its walls. Recurrence after operation takes place in four-fifths of all cases, in or near the vaginal cicatrix, while it occurs in only one-fifth in the glands. Abdominal radical operation, with removal of the pelvic glands, has not, so far, been followed by encouraging results. The reason of this is that it is impossible to remove all the glands, on account of the technical difficulties of the operation, and the anatomical situation of the glands. Winter collected 108 cases, with 41·6 recurrences within the first year.

LABOUR IN CASES OF LOCOMOTOR ATAXY.

COHN (*Centralbl. f. Gynäk.*, Leipzig, 16th November 1902) reports the case of a woman, æt. 37, nulliparous, with ataxic gait, and absence of deep patellar reflexes on both sides. Patient became pregnant after fourteen years of married life. The first indication of labour was the presence of the fœtal head at the vulva. The delivery was quite painless. The patient died one year after the birth of the child. In similar cases reported by Litschkus, Miriabeau, and Routh, the patient was quite unaware of the progress of labour.

PREGNANCY COMPLICATED WITH PELVIC ABSCESS.

WERTHEIM (*Centralbl. f. Gynäk.*, Leipzig, November 1902) reports the case of a patient, æt. 26, who had symptoms of intestinal obstruction when four and a half months pregnant. On opening the abdomen, a large abscess sac was found adherent to the uterus and to a coil of intestine. The proximal part of the intestine was distended, the distal portion empty. In attempting to separate the bowel, the abscess burst, and the uterus and appendages on the right side were removed. The patient died in twenty-four hours. About six such cases have previously been reported. Wertheim points out the great risk of rupture of a pyosalpinx, when adherent to the pregnant uterus.

DERMOID TUMOUR OF THE FALLOPIAN TUBE.

ORTHMANN (*Centralbl. f. Gynäk.*, Leipzig, December 1902) regards this as a unique case. The woman was æt. 33, and had two children. She had been curetted repeatedly for recurrent hæmorrhages. For a year she complained of pain in the right side, and there was some thickening made out in the right lateral fornix. Cystic ovary, with probably tubal dilatation, was suspected, and by anterior colpotomy those conditions were found, and removed. On opening the dilated tube, it was found to contain fat, hair, and a tooth-like body, like cartilage in consistence. On microscopic examination, germinal epithelium was found.

HYDATID CYST IN THE RETRO-CERVICAL CONNECTIVE TISSUE.

KNAUER (*Centralbl. f. Gynäk*, Leipzig, November 1902) reports the case of a woman, æt. 22, complaining of bladder symptoms for a fortnight. On examination, a tumour was found, extending upwards to near the umbilicus, with a smooth surface, and of elastic consistence. Attached to both sides of the tumour there was found a small movable growth. These were regarded as probably the ovaries, whilst the main tumour was thought to be a soft myoma. Per vagina, the pelvis was found occupied by a smooth-walled elastic tumour. The uterus measured 14 cms. At the operation the tumour was found to be a hydatid in the retro-cervical tissue. It was dissected out after splitting the posterior fornix, and the sac drained. Hooklets were discovered in the wall of the cyst.

CYSTS OF THE HYMEN.

ZIEGENSPECK (*Arch. f. Gynæk.*, Berlin, Bd. lxvii.) demonstrated a case to show that such cysts may develop during extra-uterine life. After being treated for endometritis, the patient had a miscarriage at the sixth month. No cyst was discovered at that time. Ten years later, however, a cyst 5 cms. in diameter was found at the posterior commissure, and springing from the outer surface of the hymen. This is the fourteenth case that has been reported. Winckel observed five cases in the new-born, but several cases have been noted in adults. In only two cases was removal of the cyst demanded, on account of obstruction to the passage of urine. Most of the cysts were about the size of a hazel-nut. In most cases they are due to ingrowths and separation of portions of the surface epithelium, more rarely they may be derived from remains of Gärtner's duct.

TREATMENT OF APNŒA NEONATORUM.

MINKÉVITCH (*Semaine méd.*, Paris, 1902, No. 45) recommends the following procedure, which is based on that introduced by Schultze, but is less dangerous. The infant is held vertically with the head down, the mouth and pharynx are freed from mucus. The cord is then tied, and the infant is placed in a sitting posture on a table, with the legs extended and separated; the physician takes up a position behind the infant, passes one hand into each axilla, the thumbs resting on the scapulæ, and the other fingers applied to the front of the thorax; the trunk is then bent forwards towards the angle between the separated legs, while, at the same time, the thorax is compressed by the operator's hands. The lungs are thus emptied. The body is now brought back into a horizontal position; the thorax expands, causing marked inspiration. Those movements of flexion and extension are repeated with the same frequency as the normal rhythm of respiration in the new-born. Minkévitch has used this method for the past two years, and states that he has never known it to fail, and that, even in cases of pronounced asphyxia, about a dozen of those movements have sufficed to revive the infant.

THYROID EXTRACT IN DYSMENORRHŒA.

STINSON (*Am. Journ. Obst.*, N. Y., July 1902) reports most favourably on the use of thyroidin in dysmenorrhœa. He regards it as being "a uterine and ovarian anodyne and sedative, as it arrests the different impressions at their formation." He administers 1 gr. thyroidin in capsules thrice daily, for two days before menstruation is due; the quantity is increased to 2 grs. thrice daily during the flow. He has found that relief is afforded in over 80 per cent. of cases. The treatment is efficient when the uterus and ovaries are in normal position. Any pathological lesion must be remedied by proper surgical measures.

THERAPEUTICS.

UNDER THE CHARGE OF
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DIURETIC ACTION OF RECTAL IRRIGATION WITH SALINE SOLUTION.

SALINE solution has a specific effect on the kidney cells in promoting diuresis, whether it be introduced by hypodermoclysis, by infusion, or by enteroclysis. It occurs even if the blood pressure be not raised, and even after section of the renal nerves. Using ferrocyanide of potassium as an indicator, Kemp was able to prove that, after enteroclysis, on an average the Prussian blue reaction appeared in the urine in twenty minutes. Synchronous with the appearance of the reaction, a small enema, or enteroclysis with saline solution at 99° or 100°, caused an increase in the secretion of urine, though manometric tracings showed no rise in blood pressure. Normal saline solution seems also to diminish renal congestion. The diuresis commences in about twenty minutes at all temperatures of the irrigating fluid. Cold irrigations are dangerous in kidney conditions, as they are only temporarily stimulating, and are followed by depression and diminution in the quantity of the urine. With irrigations at 110° to 120° F. there are two cycles of diuresis, the first at the end of ten minutes, corresponding to the general increase in the circulation, and the other at twenty minutes from absorption of the fluid. In conditions of high tension, as in uræmia, hot enteroclysis, acting locally as an active poultice, tends to re-establish the proper circulatory relation, reducing the renal tension. At first there may be a slight rise, but irrigation at 110° or 120° soon causes a profuse diuresis, diaphoresis, and bowel action, followed by a rapid fall of pulse tension. Kemp recommends continuous enteroclysis at 100°, gradually rising to 120° F., using a 5-inch irrigator. It is well to use a double-current irrigator, which may be improvised out of two catheters passing through a perineal pad, as the temperature and quantity of the solution can be regulated. The patient should be in the dorsal position, with the foot of the bed slightly raised. Protect the bed with rubber sheeting. Drain by a tube into a pail. To force the fluid up the bowel, pinch the outflow tube. Employ from 3 to 12 gallons at a sitting, keeping from a pint to a quart continuously in the bowels. The irrigation may be repeated every two or three hours in most cases. There is always a certain amount of absorption, on an average about one quart out of thirteen. Kemp emphasises the rapid action of the irrigation. In eclampsia, with frequent small venesections and properly administered irrigations, one can turn the scale in the patient's favour in twenty minutes. It might be wise to infuse saline solution at 120° F., at the site of venesection.—Kemp, *Med. News*, N. Y., 3rd January 1903.

ALCOHOL AS A MEDICINE, IN THE LIGHT OF RECENT RESEARCHES.

Binz considers more especially the effect of alcohol as a stimulant and as a food. With regard to the stimulant action, Binz holds that the inhibitory theory is purely hypothetical, and is opposed to the results of careful experiments. According to this theory, alcohol owes its apparent stimulant properties to its action in removing the higher inhibiting cortical centres. Binz thinks that there is no doubt that alcohol acts as a direct stimulant to the brain, and in support of this he quotes a large number of experiments, showing the effect of moderate doses of alcohol on the respiration. In rabbits, small doses of alcohol, given either by the stomach or injected into the carotid, stimulate respiration. That this action is a direct cerebral stimulation, and not a gastric reflex action, is shown by the fact that volatile oil of mustard causes reddening of the gastric mucous membrane, but no increase in the amount of air expired. For human beings, the conclusions come to are that moderate doses of alcohol stimulate the respiratory action of most men to a slight degree; that similar doses increase the respiration in the persons used as experiments, and quite distinctly if they were fasting or fatigued. The stimulation persisted even if the men fell asleep or remained sleepy. The stimulation acts directly on the nerve centres, and is due to the presence of alcohol in a dilute form in the veins. The presence of aromatic bodies in wine increases the effect of pure alcohol. The stimulation persisted for some hours after the draught of wine. As regards the question whether alcohol is a food, Binz points out that, in the last two years, six experimenters have come to the same conclusion, namely, that alcohol in moderate dose, in a healthy man, not only saves the carbon constituents of the body, but also albumin. Ott has further shown that the action is the same for a man suffering from tuberculosis. His conclusion is that, even in fever, alcohol acts as a saver of albumin, and to the same extent as an isodynamic amount of carbohydrate.—*Berl. klin. Wchnschr.*, 1903, Nos. 3 & 4.

EXPERIMENTAL STUDY OF LITHIUM.

Good has examined the literature on lithium, and has himself performed a series of experiments on cats, dogs, and rabbits. His conclusions are as follows:—Lithium is excreted into the saliva, stomach, and bowel. The chief excretion is by the urine, though more appears in the stomach and bowels when diarrhœa, vomiting, and nausea have been profuse.

Lithium can be demonstrated in the secretions within ten minutes after a hypodermic injection. Excretion is slow, and lithium may be detected in the secretions twenty-three days after administration has been stopped. Lithium salts given to animals, hypodermically or by the mouth, cause sooner or later fatal gastro-enteritis, connected undoubtedly with the excretion of the metal through the bowel wall. Lithium salts do not possess any diuretic action that cannot be accounted for by their salt action. They alkalinise the urine, acting like the other alkalies. Lithium carbonate and lithium tablets have been known to cause gastro-enteritis in man. Dilute solutions of lithium salts are not solvents for uric acid or urates.—*Am. Journ. Med. Sc.*, Phila., 1903, No. 2.

SEROTHERAPY OF EXOPHTHALMIC GOITRE.

Lanz grounds his theory on the fact that after removal of the thyroid by disease or operation, poisonous substances accumulate in the organism, which in herbivorous animals leads to chronic cachexia. The administration of thyroid gland, whether by the mouth or subcutaneously, removes these symptoms. Now, if it were possible to introduce the poisons causing cachexia into the body of a person suffering from exophthalmic goitre, one might hope to relieve the patient by giving the thyroid secretion, more to neutralise, and thus eliminating a certain amount of the excessive thyroid secretion of that disease. To test this, he has supplied typical cases with goats whose thyroid has been completely removed. The patients are directed to drink the milk of the goat. So far Lanz has tried the milk treatment in six cases with distinctly satisfactory results. The patients improved both subjectively and objectively. —*München. med. Wchnschr.*, 1903, No. 4.

ANTITHYROIDIN IN EXOPHTHALMIC GOITRE.

Möbius reports two further cases of this disease, which he has treated by the administration of serum of sheep from which the thyroid gland has been removed. The serum was administered by the mouth in 5-grm. doses. Tablets of the flesh had no therapeutic action. The serum in the two cases in which Möbius has tried it has never caused any difficulty, and has distinctly improved the patients' condition. Though the pulse rate was not materially reduced, the circumference of the neck and the tension of the struma diminished, while they slept better and felt more tranquil. From other sources favourable reports are given. At present the treatment is on its trial, and the amount of serum to be employed is uncertain. At present the price is somewhat prohibitive. —*München. med. Wchnschr.*, 1903, No. 4.

MEDICAL TREATMENT OF DISEASE OF THE GALL BLADDER AND BILE DUCTS.

Blackadder first discusses the physiological action of the liver in regard to metabolic products and toxines. Irritating products may cause the epithelium of the ducts to secrete a viscid secretion hindering the onflow of the bile, and rendering it more subject to bacterial infection either from the duodenum or through the portal circulation. The ingestion of food leads to increased bile formation. Fats are more active than carbohydrates or proteids. Ingestion of large amounts of fluid causes a more watery bile containing less biliary salts. Muscular action, such as movements of the diaphragm and abdominal muscles, favours the flow of bile. Of drugs the most important hepatic stimulants are the taurocholate and glycocholate of sodium. Then come the salicylates—sodium benzoate, euonymin, and turpentine. The other sodium salts, including Carlsbad salts, have almost no action. In all affections of the biliary passage we should see that the portal blood contains no irritating drug or toxine. The diet must suit each individual patient, in respect of digestion, general habit, work, and exercise. It should essentially be a simple one. The gastro-intestinal mucous membranes must be maintained in a healthy state by the occasional use of salines and rhubarb and the avoidance of constipation. To secure the free secretion of a normal watery bile, the diet should contain as much fat as can be taken. Between meals the free use of pure water is advocated. The clothing should not interfere with the free movement of the abdominal muscles and diaphragm, and systematic exercise for these muscles should be undertaken. The most efficient drugs are the bile salts. In non-obstructive cases ox bile may be used, though it contains bile pigments which are waste products and toxic. For slighter cases, sodium salicylate or benzoate, in doses of 60 to 80 grs. per diem, may be used.

In treating cholelithiasis, olive oil, in gradually increasing doses of from 2 to 6 oz. per diem, will increase the secretion of the bile, rendering it more fluid, and by increasing the amount of fat excreted in the bile will increase its power of holding cholesterin in solution. For the actual attacks, sedatives and anodynes are required, while at the same time Vichy water, drunk as warm as may be convenient, is to be commended. After the acute attack has passed, a Carlsbad cure is recommended. In the event of repeated unsuccessful attacks, *i.e.* without passing a calculus, and in permanent impaction, an operation is indicated.—*Montreal Med. Journ.*, Dec. 1902.

CREOSOTE IN PNEUMONIA.

VAN ZANDT has sent circulars to medical journals and individuals concerning the effect of creosote in pneumonia. He has received replies from seventy-five sources representing 1130 cases. Of these, fifty-six ended fatally—a mortality of less than five per cent. About half of those replying were of opinion that creosote can abort pneumonia, while the reporters were almost unanimous in claiming that the disease was mitigated by the use of the drug. Van Zandt claims that these replies support his opinion that a large percentage of pneumonic cases are cut short or aborted, almost all the rest are mitigated, and the remainder, a very small percentage, are not at all affected by the remedy.—*Med. Rec.*, N. Y., October 18, 1902.

INSANITY.

UNDER THE CHARGE OF

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ON THE UTILITY OF LUMBAR PUNCTURE IN THE DIAGNOSIS OF GENERAL PARALYSIS.

THE use of lumbar puncture as practised at St. Anne's Asylum, Paris, by Prof. Joffroy and Dr. E. Mercier, is described by these workers (*Journ. Ment. Path.*, N.Y., October–November 1902). The diagnosis for or against general paralysis depends upon the number of leucocytes present in the fluid removed through the puncture. In normal or ordinary insane subjects the number of leucocytes is generally between 0 and 2 per c.mm. When the number varies between 2 and 5 the case is considered doubtful, and a new puncture is made a few days later. Punctures were made in seventy cases of general paralysis, but the leucocytes were counted only in fifty-three cases, with the following results: In four cases they varied between 0 and 5; in eight, between 5 and 10; in thirteen, between 10 and 20; in eighteen, between 20 and 50; in eight, between 50 and 100; in one, between 100 and 200; and in one they numbered 204 per c.mm. As already indicated, the authors failed to find any hyper-leucocytosis in the spinal fluid of ordinary cases of acute insanity. As a proof of their statement, they record the results of their examination by this method in ten cases of dementia præcox, in three cases of mental debility with delirium, in one case of maniacal excitement of prolonged duration, in one case of acute mania, in three cases of mental confusion, and in one case of epilepsy. Finally, they made seventeen punctures in fourteen alcoholic subjects, and found the leucocytes normal in number. Notwithstanding one or two published cases to the contrary, they consider that lymphocytosis is very rare in chronic alcoholism, even when there is meningitis present. The authors consider that the difficulty of diagnosing between mental confusion and general paralysis, which is one of the finest and most difficult in psychiatry, has by this means been entirely overcome, and the method has also enabled them to correctly differentiate general paralysis from aphasias due to common focal lesions of the brain.

INDICAN, ACETONE, AND DIACETIC ACID IN VARIOUS PSYCHOSES.

AN article of considerable interest by Dr. J. H. Coriat (*Am. Journ. Insan.*, Utica, N.Y., April 1902) gives the results of the author's observations upon the elimination of the above substances — more especially indican—in cases of mental disease. The material presented is extensive, and only a few of the conclusions can be recorded here. Increased indican in the urine is shown to be a manifestation of katatonic and epileptic stupor, of the akinetic (depressed) forms of dementia præcox and general paralysis, also of alcoholic depression, and of the depressed phases of manic-depressive insanity (*folie circulaire*). In all his work the author has not been able to find proof that either the hyper-indicanuria or the depressed akinetic state of the nervous system was due to intestinal auto-intoxication. Most of the observed cases of indicanuria were upon a fixed routine diet—many of them upon milk alone; their bowels were carefully regulated, and some of them were getting salol. Having thus practically ruled out the various metabolic disturbances and the influences of diet that may give rise to hyper-indicanuria, the author considers that a striking parallelism exists between excessive indican elimination and various akinetic disorders entirely independent of the form of mental disease. The author is reasonably certain that the appearance of both acetone and diacetic acid in the urine can be referred to an abnormal metabolism, due to inanition processes which are usually associated with depressed or akinetic states; for in cases of stupor or depression, where there was no decline in body weight, both substances were almost constantly absent. He is unable to confirm Marro's observation that acetone occurs in large quantity in the urine of patients whose mental symptoms are associated with fear.

A Parasite in the Blood of Epileptics.

Bra (*Rev. Neurol.*, Paris, May 30, 1902, quoted in *Journ. Nerv. and Ment. Dis.*, December 1902) continues a description of his researches into the blood of epileptics. In seventy cases he found a distinctive parasite at certain periods of the disease. Cultivation of these parasites has now made a more complete account of them possible. The blood was examined just before the beginning of the attack, and also during its course. Blood obtained after the paroxysm had passed gave varying results. In some cases no micro-organisms could be detected, only hyper-leucocytosis and a very active phagocytosis. The parasite is apparently present only at certain times. In blood obtained just before the paroxysmal attack, small points, single or as diplococci, were perceived moving about, or united in masses vermicular in appearance. Examination of their structure showed that they are composed of grains of irregular shapes, and can readily assume an infinite variety of combinations. The number of those parasites found varies greatly in different individuals, but an examination of the blood in a large number of healthy subjects failed to reveal the presence of any similar micro-organisms. Cultures were made from these organisms. When injected in large quantities intravenously into rabbits, the animals were either seized with convulsions terminating in death, or with simple rigidity, contractions, dilatation of pupils, etc., and, after the crisis, emission of urine, relaxation of muscles, lowering of temperature, torpid condition for about an hour, and then a return to the normal state. The varying severity of the attacks was probably due to the difference in the virulence of the infection. To what place shall these micro-organisms be assigned? The most recent experiments would suggest that they may be considered micrococci, presenting themselves in the form of diplococci and short chainlets capable of extension, so as to take on the forms of cocco-bacilli, diplo-bacilli, and strepto-bacilli. The frequent junction of the parasites, and the hæmatin, the pallor and alterations of the parasites during the crisis period, the disappearance of a certain quantity of hæmoglobin, the modification in the character and consistency of paroxysmal blood which have been observed for a long time, altogether indicate that, like the agent of paludism, the parasite under consideration lives at the expense of the normal elements of the blood. Taking into consideration the fact that, rare or absent during long intervals between seizures, the parasite shows itself in increasing quantity before the attack, and lessening, or even disappearing, after it, the epileptic seizure may be regarded as a series of infections in which the convulsive crisis is parallel to the fever crisis of malaria. This also explains the intermittent periods. The author believes that the securing of cultures and the results of inoculation leave little doubt that the micro-organisms here described are the pathological agents of epilepsy, and that the symptom complex which characterises the disease is a result of the irritative action which they exercise over the different nerve centres through the medium of the circulation.

DERMATOLOGY.

UNDER THE CHARGE OF

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VACCINIA OF THE FEMALE GENITALS.

Löwenbach and Brandweiner of Vienna (*Monatsh. f. prakt. Dermat.*, Hamburg, January 1, 1903), after relating several instances of this somewhat rare localisation, give the following general description. The commencement is analogous to that of vaccinia elsewhere, with redness and swelling combined with itching and burning. The vesicles often rupture before they become pustules, so that a vaccination ulcer arises. Mechanical friction or maceration by vaginal or uterine secretions are the cause of this. In this alteration of the typical appearances lies the difficulty experienced in the diagnosis. Those affected commonly present themselves for examination at this stage. On the labia, the inner aspect of the thighs, and about the anus, are seen linseed to farthing-sized ulcers, covered with an easily removable, greyish yellow, greasy deposit, beneath which is the bleeding corium. Around the ulcer is a slightly œdematous, clear red, inflammatory areola. The inguinal glands are swollen and tender. Scars such as remain after vaccination on the arm have been observed, and the writers think this may be due to the mode of infection. This is usually occasioned by contact with the hands which have been contaminated through manipulation of vaccinal sores.

The virus is therefore simply deposited on points which have been despoiled of their epidermis, as by slight maceration. Thus, too, the resulting pustules are of unusually large dimensions. There are only four conditions which are likely to be confused with this. From pemphigus vulgaris, genital vaccinia is distinguished especially by its acute course, the moderate degree of glandular enlargement, and the immunity of the general surface. From pemphigus vegetans, which by preference and often alone affects the genitals, the anal region, and the mouth, the absence of the typical papillary proliferation of the rete Malpighii and the chronicity of the latter process. In eczema of these parts, the papules, the premonitory oozing, and the absence of glandular enlargement, will set one right. In herpes progenitalis the vesicles are small, rapidly flatten, and dry up, do not itch nor affect the glands. In the stage of ulceration, after destruction of the vesicle wall, it must be differentiated from other varieties of ulceration. In the first place, the moist, broken-up syphilitic papule comes into consideration, and the resemblance is not small. In vaccinia the infiltration is wanting, some remains of the vesicle persist at the margin, while the erosion itself and its edge have a clear red tint. The same persistence of the vesicle roof and the predilection which aphthous ulcers have for the mucous surface, enables one to discriminate. The paper is particularly well illustrated.

DISEASES OF THE NAILS.

CHARLES J. WHITE has made (*Boston Med. and S. Journ.*, November 13, 1902) a clinical study of 485 cases of nail disease, and finds that only six conditions give rise to 404 of these. Of these eczema furnishes 107. The changes observed may occur in the nail walls, matrix, bed, and plate, and are due to the same causes as eczema of the skin. While uncommon before 20, the disease prevails through adult life to 70, then lessens in frequency. In the acute form the nail walls are red and swollen, the plate loses its normal convexity, becomes rough and lustreless, is discoloured, soft spots appear in it, to become later minute punctate depressions, while pain is felt in the bed. If the cutaneous disease continue, further results ensue, especially hyperkeratosis of the bed, followed by thinning and brittleness of the plate. If the matrix is affected, a deep transverse furrow may result. The pathological changes consist in the formation of eleidin and horny matter rather than the normal nail substance, together with œdema and cellular infiltration about the vessels of the corium. If trauma or whitlow are so severe as to affect the matrix, permanent changes occur, which are constantly reproduced throughout the life of the individual. Paronychia comes third, providing sixty-eight cases. This is an acute or subacute process, and usually occurs in women who wash dishes or scrub floors, or should the fingers be subjected to constant irritation. The most common nail alterations are discoloration, transverse depressions, and hyperkeratosis subungualis. Psoriasis holds a position almost identical with paronychia as a disturber of nail equilibrium, and does so relatively much oftener than eczema. The disease can exist alone in the nails, but the diagnosis is then hazardous. The condition is most frequent in men between 20 and 40. The simplest show round punctate depressions in the plate, thought pathognomonic of psoriasis by Unna and Heller, but encountered also in eczema by White. The commonest advanced lesions are hyperkeratosis of the bed, discoloration, and transverse depressions. In the subungual corium there is great dilatation of the vessels instead of the inflammatory œdema observed in eczema. The prognosis is almost always good, but he has seen severe cases of old standing, where the nails were permanently lost. Some noxious occupation inducing dermatitis, or some chance poisoning of the skin, accounted for sixty-two cases. The prevalent symptom was koilonychia, or spoon-nail, but other alterations, resembling those in psoriasis and eczema, were likewise met with.

A New Finsen Lamp.

The brilliant results which were seen to follow the light treatment of lupus by Finsen at Copenhagen, were in a measure discounted by the great expense of the apparatus and its complicated nature, by the number of nurses necessary, and by the amount of electricity expended. Hence efforts have been made to simplify the plan. The lamp of Lortet and Genoud, and the similar one made by Marshall and Woods, were on the principle of approximating the luminous focus, while not concentrating the rays; that of Bangs, to produce with a feeble electric intensity an enormous quantity of ultra-violet rays, in an almost cold condition. The apparent effects of these seemed satisfactory. Thus with the Lortet and Genoud lamp, in fifteen minutes as good a blister or even a better could be evoked as with the original apparatus of Finsen in an hour. Leredde (*Ann. de Dermat. et de Syph.*, Paris, December 1902, p. 1161) points out that it is an error to suppose that the superficial macroscopic photogenic reactions can enable us to form an opinion as to the deep photogenic reactions. Finsen says he has proved that the chemical rays have not all an equal power of penetration into the tissues. The blue and the violet rays have the highest penetration and not the ultra-violet, as is generally believed at present. The question was tested in the following way. Finsen and Tansen placed before each of the apparatus employed in phototherapy, rabbits' ears laid one on another, in variable numbers, and beneath them a piece of sensitive paper. While with the apparatus of Finsen, and with that of Lortet and Genoud, one second was needed to pierce a rabbit's ear, one minute was required with that of Bang. With two ears superimposed, the sensitive paper reacted in five to six seconds when the Finsen was used, in twenty to twenty-five with Lortet and Genoud, while it required five minutes in the case of Bang's. For three ears the Finsen took twenty to twenty-three seconds, the Lortet and Genoud four to five minutes. Finally, while it was impossible with the latter apparatus to pierce four ears, this could be done in two to two and a half minutes with the Finsen. The results are very important. It follows from these experiments, that in phototherapy one must use methods which concentrate on a limited area a great quantity of violet rays, in short, a high intensity of light. Improvements in the technique of phototherapy must therefore be on these lines. Only after prolonged trial will it be possible to decide if the new appliances give as good results as that of Finsen.

Leredde, while he has had encouraging results from the Lortet and Genoud, has not treated as severe cases as those which he saw at Copenhagen, and he has had to increase the duration of the sittings from twenty minutes to an hour. Finsen and Reyn have now constructed a new concentrator with which one patient can be treated at a time. This consists of a self-regulating lamp borne on an arm; it has a strength of 20 ampères and 55 volts, requiring a direct and continuous current of 100 volts. Its principle is the same as that of the large Finsen lamp. There are two lenses of rock crystal, the space between them being filled with distilled water. There is outside this a water-jacket through which circulates a stream of cold water. There are some subsidiary details impossible to follow without an illustration. So far as Leredde has been able to satisfy himself, by preliminary trials, the photogenic reactions seem identical with those of Finsen's original lamp.

GENERALISED EXFOLIATIVE DERMATITIS.

BOWEN (*Journ. Cutan. and Genito-Urin. Dis.*, N.Y., December 1902) cites four cases illustrating different types of this obscure condition. The first was in a woman æt. 27, who had already had three previous ones. Each began suddenly, with fever and gastric disturbance, on the face, as an intense erythema accompanied by œdema, extending rapidly over the entire body. Exfoliation commenced on the fifth day, continued actively for three weeks, then slowly diminished, but did not wholly cease till five months had passed, all the nails and the hair being shed. At the outset of an attack the scales were large, later becoming fine and branny. A mottled pigmentation with leucodermic spots remained. Perspiration ceased except on the face. Almost all the seizures occurred in summer or autumn. This is an example of recurrent desquamative scarlatiniform erythema, which may arise from the ingestion of various drugs, though this cause could be excluded here. Besnier holds that in certain predisposed persons many different causes, as medicaments, toxines, local irritants, etc., may determine this manifestation, but that the cause in the various attacks may not always be the same. The second case was in a man æt. 72, who had always enjoyed good health, and had had no previous skin affection. It also began with violent erythema of the head and face, associated with œdema, which spread quickly to the rest of the body, was accompanied by profuse scaling, and only slowly disappeared. White circular spots showed themselves in the hyperæmia, and gradually grew larger. No very sharp line of demarcation separates this form from that first described, nor from secondary desquamative dermatitis. The third was apparently one developing out of the dermatitis occasioned by the poison ivy, as she lived in the country and was in the habit of walking in the woods. The general exfoliative dermatitis lasted over a year before there was any sign of improvement, and even then frequent relapses took place. These are the forms which originate in psoriasis, eczema, or lichen planus, or are due to the internal administration of some drug, such as quinine or belladonna, or some external agent as mercury. [Cases have come under my notice following the use of chrysarobin, or contact with primula obconica.—W. A. J.] The last instance was one of pityriasis rubra of Hebra's type. The patient was 25 when the disease began. It also commenced on the face, and resembled an erythematous and scaling eczema. The redness and scaliness became universal; there was no thickening or exudation, and for years the health was maintained. Three years after the onset the hair fell off, and the nails withered away. In the last year progressive atrophy of the integument set in, with loss of the subcutaneous fat. Eventually the skin shrank so that the body looked only half its size. There were no glandular enlargements, but marked evidences of heart weakness. There were no signs of tuberculosis such as Jadassohn found in some cases of a similar type.

DISEASES OF CHILDREN.

UNDER THE CHARGE OF

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SPONTANEOUS HÆMORRHAGES IN NEW-BORN CHILDREN.

Abt (*Journ. Am. Med. Ass.*, Chicago, 24th January 1903) records thirteen cases which had come under his personal observation. The bleeding in all the cases was spontaneous in origin, and consisted of an oozing from the smaller vessels of the mucous surfaces, or subcutaneously. The bleeding usually occurred from more than one situation, but in the milder cases there was only one bleeding point.

In several of the cases recorded, the hæmorrhages did not occur till an interval of from a few weeks to six months after birth, but in the newly born babies the bleeding started in two cases at birth; in one on the second day; in one on the fifth day; in two on the fourth day; in one on the sixth day; and in two septic cases not until the fourth week.

The sites of the hæmorrhages in the author's cases were as follows:—umbilicus, three times; under the skin, six times; from the nose, four times; from the mouth, seven times; from the stomach, twice; from the vagina, twice; from the bowel, five times; and from the ear, once. In the larger number of cases of bleeding from the umbilicus, the flow was of a slow oozing character. In one of the cases a profuse flow occurred, which tended to recur at intervals. The hæmorrhages under the skin were generally in small purpuric spots, and the bleeding from the mouth and nose, as a rule, was of a slight oozing character. Ecchymotic spots were frequently present on the soft palate, but in one case a fissure occurred on the gums of the upper jaw which bled continuously. The blood from the stomach and bowel was always dark in colour. The hæmorrhage from the female genitals in two cases was of a very profuse nature, but in no case did bleeding take place from the genitals in male children. In all the cases, with one exception, there was elevation of temperature, and in all of them there were exacerbations of fever; cyanosis occurred in two of the cases as a late manifestation, and in several jaundice developed, sometimes of a very intense degree. All the children showed loss of weight, and convulsions were of frequent occurrence. No case of hæmophilia occurred in the series, as this disposition very rarely develops till the end of the first year. Children who suffer from spontaneous hæmorrhages, if they recover, do not develop recurrent bleeding in later life. The author does not consider the loss of blood sufficiently great to be assigned as the cause of death in these cases, as in many of the fatal cases the loss was quite inconsiderable. He considers that death must be ascribed to a general toxæmia, whether it take place as an acute or as a chronic infection. The various theories which have been suggested as to the etiology of this condition are discussed. In the writer's opinion a certain number are due to sepsis, which may arise from a wide variety of causes, so that no one factor can be credited as being responsible for all cases of spontaneous hæmorrhage. He considers it improbable that any specific micro-organism will ever be discovered as the sole cause of hæmorrhagic disease in new-born children.

The explanation should be sought in certain peculiarities of the blood vessel walls, in abnormal states of the blood, or both, and we might infer that the porosity of the vessel wall is increased, or that the tendency of the blood to clot is diminished in such cases. Examinations of the blood have not demonstrated any changes, either in its chemistry or in its morphology.

General experience as to treatment has led him to formulate the following propositions:—(1) Internal remedies, such as ergot, tincture of the perchloride of iron, and extract of suprarenal gland, have absolutely no influence on the progress of the disease. (2) The local treatment of the disease by styptics, of whatever kind, packing with gauze (as when the hæmorrhage occurs from the vagina), and even the local application of suprarenal gland extract, are without permanent influence on the intensity or duration of the hæmorrhage. (3) The employment of gelatin in two cases was followed by recovery, due probably to the undoubted power which gelatin possesses of coagulating blood on bleeding surfaces. A pad of sterile gauze may be soaked in a 10 per cent. gelatin in normal salt solution, and applied to the bleeding surface. A small amount of bichloride of mercury may be added to this solution. Its preparation must include careful sterilisation. A 2 per cent. gelatin in normal salt solution may be given subcutaneously. The peptone, which is ordinarly added to gelatin for culture material, should be omitted, as it counteracts the coagulating effect of gelatin. From 25 to 50 c.c. of this solution may be given subcutaneously to a new-born infant, and may be repeated once daily. The author, while warmly recommending the employment of gelatin by the mouth and its local use, utters a caution against its subcutaneous injection, as it has been found that even sterilised gelatin contains toxic products. These products are probably ptomaines due to the decomposition of the bone of which gelatin is usually manufactured.

THE RELATION OF THE THYMUS GLAND TO MARASMUS.

THE authors of this paper, Drs. Ruhrah Stokes and Rohrer, consider that cases of atrophy should be divided into two classes, on a pathological basis, namely, the primary cases where the cause is as yet unknown, and the secondary cases which follow definite pathological conditions. Baginsky believed that the disease was due to an atrophy of the mucous membrane of the intestine, interfering with absorption, and in this way causing marasmus. He estimated that atrophic infants only absorbed 50 per cent. of the nitrogen ingested. This explantion has been disproved by many subsequent investigators. Heubner considers that the condition is brought about by auto-intoxication, from decomposition of food in the intestinal tract. Escherich and Marfan both claim that the reason why breast-fed babies so seldom suffer from atrophy is to be found in the greater number and activity of the nutritive ferments in mother's milk than in cow's or goat's milk. Herard, and more recently Friedleben, have pointed out that the size and condition of the thymus gland was an index to the state of nutrition of the body. The authors maintain that this fact rests upon a firm basis of trustworthy observation, and that in the eighteen autopsies on atrophic babies performed by them they confirmed not only this fact, but observed other changes in the condition of the thymus not previously described. In all the cases examined, the thymus gland was much wasted and atrophied, the average weight in sixteen cases being only 2·2 grms. This presents a great contrast to the general normal weight of the thymus in children, which averages about 18 grms. The microscopic examination showed great thickening of the fibrous capsule of the gland and of the interlobular fibrous tissue. The thickened bands between the lobules contained numerous veins and arteries, and the adventitia of these vessels seemed to thicken and increase the interlobular connective tissue, which is richly infiltrated with spindle-shaped connective tissue cells. The lymphocytes are decreased in number, and the reticular endothelium is increased.

The next stage seems to result in an almost entire disappearance of the lymphoid structure of the lobule and an increase of the reticular endothelium. These areas often contain many polymorphonuclear leucocytes and newly formed blood vessels. This tissue greatly resembles fresh granulation tissue. One of the most striking features present is the hyaline degeneration and increase in the size of the bodies of Hassall. These usually take up a bright rose-red stain by Gieson's method, although sometimes they stain an orange colour. The state of nutrition of infants may be estimated by a microscopic examination of the thymus. In those of normal infants, the structure of the thymus is unaltered, and the differentiation between the cortex and the medulla is plainly visible. In moderate atrophy, the medulla and cortex are not easily distinguished; while in severe atrophies the changes described above are readily observed. With such marked changes in the glands, it seemed rational to the authors to expect that the administration of the thymus gland to atrophic babies would be of value. Twelve cases were given doses three times a day, starting with 1 gr. and increasing until the dose had reached 3 grs. of the dried gland.

There was no appreciable change noticed, either during the administration or after treatment was discontinued.—*Am. Journ. Med. Sc.*, Phila., 1902, vol. cxxiv. p. 847.

EMPYEMA IN CHILDREN: A CONTRIBUTION TO ITS BACTERIOLOGY.

THE following is a brief abstract of a paper, based upon the bacteriological and clinical examination of forty cases by Dr. W. I. S. Bythell. The object was to determine, not only the species of bacteria present, but their source and path of infection and the part they played in influencing the clinical course and termination of the disease. He found that empyema is common in children of all ages, and is decidedly more frequent in boys than in girls. The disease resembles pneumonia in being more prevalent in spring and early summer. The pleura is infected in the great majority of cases by a process of direct invasion from a pulmonary lesion; the latter is usually a catarrhal pneumonia. In many cases, which are apparently primary, the source of infection is probably also an undiscovered patch of broncho-pneumonia. The micro-organism which is by far the most frequently present is the pneumococcus. The clinical results of empyema depend to some extent upon the species of bacteria found within the pleura, the pneumococcic cases being on the whole the mildest. The micro-organism may, however, give rise to very serious complications, either by direct invasion of surrounding viscera or by metastatic infection.

The bacteriological examination of the pus gives other indications as to the clinical prognosis, which appear to be of considerable value—(*a*) A small number of poorly stained micro-organisms which give feeble cultures usually denotes a good prognosis; (*b*) the reverse condition is not so frequently accompanied by severe clinical symptoms, especially when phagocytosis is well marked; (*c*) vigorous cultures are not in themselves a sign of pathogenic activity. The bronchial glands are probably invaded by micro-organisms from the pleural cavity in every case of empyema. The organisms are sometimes also found after death in the mesenteric glands. With the exception of those cases in which there are tuberculous lesions of the pleura or lung, the best results may be expected from the resection of a rib, with free drainage of the pleural cavity.—*Med. Chron.*, Manchester, November 1902, p. 81.

REPORTS OF THE MEDICAL SOCIETIES.

Edinburgh Medico-Chirurgical Society.—*March* 4, 1903.—Dr. **Underhill** in the chair.—Dr. D. C. **Watson** showed a case of verrucæ planæ juvenilis (with photographs to illustrate treatment).—Dr. F. D. **Boyd** showed—(1) A case of localised syphilitic meningo-myelitis; (2) a case of ophthalmoplegia.—Dr. G. A. **Gibson** showed—(1) A child with combined obstruction and incompetence of both aortic and pulmonary orifices; (2) a man with Raynaud's disease, showing some interesting features.—Dr. **John Thomson** showed a case of spasmodic stricture of the œsophagus in a boy æt. 9 years.—Mr. **Alexis Thomson** showed—(1) A case of infantile paralysis of the lower extremity, treated by arthrodosis of the knee and Pirogoff's amputation at the ankle, eight years ago. The operations had enabled the patient to use the hitherto useless limb, and there had been great development of the atrophied tissues in consequence. (2) Cases of Dupuytren's contraction of the palmar fascia; comparison of result of excision of fascia with result of Adami's operation. The results are in favour of Adami's operation.—Mr. **Stiles** showed—(1) A child æt. 7 years, showing first stage in the treatment of double congenital dislocation of the hips; (2) an infant after excision of suboccipital meningocele, complicated with hydrocephalus.—Dr. R. A. **Lundie** showed a case of dwarfing of one metacarpal bone, due to early synostosis (radiograph by Dr. Rainy).—Dr. **Russell** read a paper on "Gastric Hyperacidity—Hyperchlorhydria—its Nature, and its relation to Dyspepsia and Dilatation." Much uncertainty exists as to the causes of gastric disturbances. In many cases excess of hydrochloric acid, and not fermentation of the food, is the cause of hyperacidity. 25 per cent of cases of dyspepsia are due to this cause. The history of a case is usually that the patient feels quite well in the morning, feels pain one, two, or three hours after breakfast. The pain recurs after the mid-day meal. It may be very slight or very severe, and is usually referred to the epigastrium. Its duration varies, and depends on the constitution of the meal. There is sometimes epigastric tenderness, generally in nervous cases, and usually superficial. Other symptoms are heartburn, flatulency, and eructations of gas. Constipation is the rule. Paroxysms of pyrosis may occur. These symptoms are due to the fact that digestion of starch ceases when the acidity reaches a certain degree, but the proteid digestion goes on. In the normal state the secretion of hydrochloric acid ceases when the proteid is satisfied; when, however, the secretion goes on, discomfort ensues. The presence of unaltered starch in the stomach stimulates the secretion of HCl; there being no more proteid left, the acidity increases. The pylorus remains closed because of the excess of HCl. There is probably such a condition as an acid dyscrasia. The phenomena cannot be explained as a neurosis. The presence of acid in the stomach causes catarrh and eventually dilatation. In the treatment of these cases the constipation should be attended to. Small doses of alkali, given whenever symptoms begin, are very useful. The use of acids is of no value. Careful dieting is necessary, only those carbohydrates which are most readily digested should be allowed. Total exclusion of carbohydrates from the dietary may be required.—Mr. **Robert Purves** read a paper "On Hand Disinfection," which appears in this number.

Edinburgh Obstetrical Society.—*March* 11, 1903.—Dr. **Jas. Ritchie**, President, in the chair.—**Specimens.**—Dr. **Haultain** showed—(*a*) Ovarian cyst with twisted pedicle, removed during the fourth month of pregnancy; (*b*) fibroid of broad ligament; (*c*) uterine fibroid removed by pan-hysterectomy, showing obliteration of the cervix.—Dr. **Angus Macdonald** showed—Enlarged thyroid from new-born infant, causing fatal tracheal compression.—Dr. **Jessie Macgregor** showed—An œdematous fœtus.—Dr. W. **Fordyce** showed—(*a*) Densely adherent ovarian tumour, with twisted pedicle; (*b*) large dermoid ovarian tumour.

Communications.—Dr. **Morison**, West Hartlepool, read a paper on "Five Cases of Abdominal Section for Emergencies during Pregnancy." The first case was one in which Porro-Tait's operation was performed during labour, on account of a deformity of the pelvis preventing delivery per vaginam. The uterus was cut away and pedicle pins fixed the stump to the abdominal wound. Mother and child did well. In Case 2 the same operation was performed at the ninth month on a pregnant uterus, which was also sarcomatous. The child did well. The mother recovered from the operation, but died subsequently from extension of sarcoma. Case 3 was a Porro-Tait operation for contracted pelvis. The uterus was amputated, and the stump secured to the abdominal wall by pedicle pins. The child is living, and the mother recovered. Case 4 was one of Cæsarean section for eclampsia at the sixth month of pregnancy. The child had been dead for some time. The mother recovered. Case 5 was a supravaginal hysterectomy, performed on account of rupture of a pregnant uterus at the fourth month. The patient recovered.—The **Secretary** read Professor **Kynoch's** (Dundee) paper on "Three Cases of Unruptured Tubal Gestation treated by Operation, with Notes of Cases simulating this Condition." The cases were described in detail, and reference made to the treatment of all such cases. Thereafter notes of four conditions simulating extra-uterine pregnancy were read. They were cases of normal pregnancy, hæmatoma of the ovary, tubal disease, and retroflexion of the uterus.

Glasgow Medico-Chirurgical Society.—*March* 6, 1903.—**Demonstration of Cases by some Members of the Staff of the Glasgow Eye Infirmary.**—Dr. **Fergus** showed—(1) A spectrometer which he had devised for his own use; (2) an eye removed for a tumour of the sclerotic; (3) a patient with cholesterin crystals in the anterior chamber; (4) a small tumour, probably tuberculous, at the periphery of the iris.—Dr. **Meighan** showed—(1) Boy with a small cornea (6 mm. in diameter), coloboma of iris in each eye, and congenital absence of the lens; (2) two cases of dislocation of the lens, the result of a blow on the eye—(*a*) lens lying in anterior chamber; (*b*) lens dislocated downwards; (3) two cases of keratitis; (4) three cases of iritis—(*a*) syphilitic, (*b*) rheumatic, and (*c*) idiopathic; (5) case of retinitis accompanying phosphaturia.—Dr. **Hinshelwood** showed—(1) A man suffering from locomotor ataxy. The ophthalmoscope revealed optic atrophy. With the perimeter peripheral constriction of the visual field was found. There was slight ptosis of the left eyelid, and the left pupil was somewhat dilated as compared with the right. The knee-jerks were gone, and the Argyll-Robertson sign was markedly present. Ataxic symptoms could only be brought out in applying the finer tests. Dr. Hinshelwood showed the case, on account of the importance of early diagnosis in cases of locomotor ataxy. (2) The brain of a patient whose condition he described eight years ago. The patient suffered from word-blindness and right homonymous hemianopsia. There were no other cerebral symptoms whatever. The patient died a few months ago from a hæmorrhage into the medulla. The first hæmorrhage was into the left calcarine fissure.

Glasgow Pathological and Clinical Society, *March* 9, 1903.—Mr. A. E. **Maylard**, President, in the chair.—Dr. A. **Maitland Ramsay** demonstrated—(1) A case of ophthalmoplegia. (2) A case of detachment of the retina, which had been treated by subconjunctival injection of saline solution; the fields of vision of eight other cases treated in the same way were also shown; in six there was marked improvement, in the other two cases none. (3) A case of tuberculous iritis.—Dr. J. **Crawford Renton** read—(1) Notes of the case of a girl, æt. 12, operated on for a burst appendix, and ten days after for obstruction of the bowels. (2) A case in which recurrent attacks of obstruction of the bowel were caused by a gallstone impacted in a contracting ulcer of the ascending colon.—Dr. J. **Wyllie Nicol** showed a patient the subject of generalised favus, with microscopical preparations from the case.—Mr. A. E. **Maylard** showed specimens of bowel from two successful cases of enterectomy connected with strangulated femoral hernia.—Dr. **John** M. **Cowan** and Dr. A. R. **Ferguson** showed several specimens illustrating congenital cardiac anomalies. Several fresh specimens were also exhibited, and a number of microscopic and macroscopic preparations were on view during the meeting.

ANALYTICAL REPORTS.

LOFOTOL.

(Southall Bros. & Barclay, Ltd., Birmingham.)

LOFOTOL — the derivation of the term is easily seen to have origin from the Lofoten Isles—is a pure cod-liver oil, charged with carbonic acid gas. It is described as "sparkling"—Sparkling Oleum Morrhuæ!—"saturated," according to the manufacturers, with carbonic acid gas, at what pressure it is not stated. Supplied in bottles with the now familiar screw-stopper, it must be kept cool, and, like port with a precipitate, handled carefully before removal of, and while removing, the stopper; otherwise, some of the gas may be liberated, and if the some be a big some, your carpet may be marked, and your room for long fishily reminiscent. No such accident occurred to us; indeed, our sample, despite vigorous experimental shaking and ill-usage, absolutely refused to "fizz" in the bottle, stopper in or out, whatever form of excitant treatment was adopted; although, introduced into the mouth, a considerable amount of effervescence at once occurred, and continued as the oil passed down the œsophagus. In fact, the behaviour of this preparation, when brought in contact with warm, living animal surfaces, recalls the ebullition of gas from peroxide of hydrogen under like conditions, and tends to show that oleum morrhuæ has a closer affection for CO_2 than water, or alcohol and water, have; and that it refuses to part from the gas, despite freedom from pressure, only consenting to decree *nisi* when brought in contact with organic structures under certain conditions or by the action of heat.

Champagne, when flat, is unpalatable; if it sparkles not in the glass, it palls on the palate. Lofotol, flat in the spoon, fuffs in and tangs the mouth, descends to the stomach still stimulant, its oleaginous content undergoing subdivision from bubbles of gas; the stomach is allotted an easier task in ridding itself of the oil through the pylorus, owing to this disintegration; the bowel more readily resolves it into absorbable droplets.

Another advantage: Carbonic acid possesses antiseptic properties. Cod-liver oil plus CO_2 is probably less liable to become rancid, as the makers say, and certainly less easily oxidisable.

The conception of a pure cod-liver oil, effervescing when introduced into the mouth, the consequent tartness largely overpowering its frequently repellent taste, and through the evolution of gas bubbles rendered less difficult of digestion, is in truth worthy of all praise.

CALCUSOL.

(A. Bishop, Ltd., London.)

CALCUSOL is the registered name for an effervescent compound of potassium bicarbonate and a neutral, soluble salt of piperidine, formed by combination of the base with para-sulphamine-benzoic acid. This salt is piperidine para - sulphamine - benzoate — $SO_2NH_2C_6H_4COOH\ C_5H_{11}N$. It is stable up to 100° C., does not absorb moisture nor carbonic acid from the air; unlike the base, contains a large percentage of piperidine, about 30 per cent., has no disagreeable taste. Thus the full title of Calcusol is: "Granular effervescent piperidine para-sulphamine-benzoate c̄ bicarbonate of potassium." No wonder the makers have registered the shorter name for it! Piperidine has been shown to possess considerable powers as a solvent of uric acid, but a nasty smell and taste have combined to render its employment unsatisfactory. The manufacturers of the new salt state that only after a long series of experiments did they succeed in discovering a stable, safe compound, free from unpleasant sensible attributes. They, following Tunnicliffe and Rosenheim, allude to the power of organic salts of piperidine to increase the production of soluble xanthins, while at the same time diminishing that of the less soluble uric acid. An hour after 5 grs. of the piperidine salt had been taken internally, its presence in the urine could be detected; all traces have disappeared in twenty hours, showing that it is readily eliminated.

Its use in gouty cases, within our own knowledge, has been followed by very promising results. Calcusol is well worth a trial. It is no mysterious proprietary nostrum of secret composition, but a preparation the nature of which is known.

LAXATIVE FRUIT CONFECTION.

(A. K. Stewart, Edinburgh.)

THIS is a very elegant and valuable preparation derived from some species of fruit, the name of which is withheld. It is too risky a matter to hazard a guess as to the species employed, transformed as it is into what is no more nor less than jam. Flavoured with ginger and sweetened, there is little difference between it and the ordinary domestic rhubarb or fig preserve; indeed, it might easily be mistaken for them. But very unlike rhubarb jam is it thereafter; for it exerts a gentle, and usually certain, laxative influence on the bowel, producing in some hours a satisfactory evacuation without griping or nausea.

When spread upon bread or biscuit, and allowed to be thought, or said to be (as it truly is), jam, children take it without demur; the usual dose of one teaspoonful readily being taken in this way. Our experience of the confection dates from some years back, and convinces us that it is a preparation of great value—agreeable in taste; smooth in action; and apparently necessitating no increase of dosage after regular employment of it for some time.

MONTHLY NOTES ON METEOROLOGY AND VITAL STATISTICS.

By A. LOCKHART GILLESPIE, M.D., F.R.S.E., F.R.C.P.Ed.,
MEMBER SCOTTISH METEOROLOGICAL SOCIETY.

Meteorological Means for the East of Scotland District, for the Four Weeks ending February 28, 1903; and for the Year from January 4.

	Temperature.			Rainfall in Inches.		Sunshine. Hours.		Mean Daily Variability of Temperature.
	Mean.	Accumulated Day-Degrees. Above 42°.	Accumulated Day-Degrees. Below 42°.	Actual.	Accumulated from Jan. 4.	Actual.	Accumulated from Jan. 4.	
Mean	37°·7	[1] 39° [2] 68°	160° 330°	2·4	4·8	70	108	...
Observed	41°·7	[1] 88° [2] 113°	770° 256°	4·4	8·3	41	67	1·0
Difference	+4°·0	[1] +49° [2] +45°	−83° −74°	+2·0	+3·5	−29	−41	...

Vital Statistics.

Mortality in Four Large Towns in the East of Scotland (Edinburgh, Dundee, Aberdeen, and Leith), during February, and since January 1, 1903. Actual Numbers and Rate per 10,000 per annum.

	Total.		Constitutional Diseases.		Circulatory System.		Respiratory System.		Nervous System.	
	No.	Rate.	No.	Rate.	No.	Rate.	No.	Rate.	No.	Rate.
Deaths expected and Mean Rate for 1891–1901	1263 2621	206 215	229 463	37·6 38·0	111 241	18·2 19·7	270 578	44·3 47·4	131 278	21·6 22·8
Actual Deaths and Rate per 10,000	1020 2345	168 192	219 465	36·0 38·2	95 250	15·5 20·4	171 450	28·1 36·9	112 258	18·4 21·2
Difference from Mean	−243 −276	−38 −23	−10 + 2	−1·6 +0·2	−16 + 9	−2·7 +0·7	−99 −128	−16·2 −10·5	−19 −20	−3·2 −1·6

	Digestive System.		Urinary System.		Pneumonia.		Phthisis.		Cancer.	
	No.	Rate.	No.	Rate.	No.	Rate.	No.	Rate.	No.	Rate.
Deaths expected and Mean Rate for 1891–1901	72 156	11·8 12·8	31 62	5·1 5·1	103 216	17·0 17·8	117 231	19·2 19·0	53 109	8·7 9·0
Actual Deaths and Rate per 10,000	73 173	12·0 14·2	31 59	5·1 4·9	88 217	14·4 17·9	94 204	15·5 16·8	51 108	8·3 8·9
Difference from Mean	+ 1 +17	+0·2 +1·4	±0 −3	±·0 −0·2	−15 + 1	−2·6 +0·1	−23 −27	−3·7 −2·2	−2 −1	−0·4 −0·1

* Note.—The figure [1] denotes the data for February, [2] for year to date.

The weather during the four weeks of February was most abnormal. The mean temperature exceeded the normal average by 4° F.; the excess of day-degrees above 42° F. over the normal figure equalling an 126 per cent. increase; the decrease in day-degrees below 42° F. forming 52 per cent. of the average total; the rainfall was 83·3 per cent. above the mean; the hours of bright sunshine 41·4 per cent. below.

The combined figures for the first eight weeks of 1903 closely correspond to those for February; the excess of rainfall working out as 72 per cent. above the average.

The total number of deaths recorded in February was 19·2 per cent. beneath that expected; deaths from respiratory and phthisical causes were especially below the average for 1891–1901. Influenza caused fourteen deaths during the month.

EDINBURGH
MEDICAL JOURNAL.

EDITORIAL.

The Surgical Staff of the Infirmary.

A TIME comes in the affairs of institutions when it is wise, for the authorities who control them, to reconsider the arrangements of their working. Reconstruction of companies often gives them a new life, and they improve by leaps and bounds, so also it may be with institutions. Thirty years ago the work of the Royal Infirmary was done by a certain number of physicians and surgeons; to-day it is done by a similar number, with the addition of a junior staff. Then, as now, the treatment of the patients was conjoined with the teaching of students. But tremendous changes have taken place, more particularly on the surgical side of the Infirmary, in three directions. First, the increase of patients—they have doubled in number. Second, the enormous increase in operations—they have quadrupled. Third, the necessary addition to teaching, and compulsory attendance in the wards, due to the new University Ordinances *re* clinical surgery certificates. In regard to the surgical work, would the present arrangement be improved by reconstruction? We believe it would. The time has come when more wards are required, and when an addition to the senior staff (surgeons) would benefit both the patients and the students. Delegation of work is not so satisfactory as work done by the surgeon in charge, as the work cannot be done efficiently by two men at the same hour. The present time is opportune, as wards are soon to be vacated on the surgical side—the ophthalmic and aural pavilions being about to be opened. The vacated wards should be utilised for surgical patients, and an additional surgeon appointed. This would further develop teaching and relieve the present overcrowding of the wards in use. Patients would be admitted earlier, and their diseases more quickly treated. The length of time spent in hospital by patients would be shortened, and an economy in expense per patient achieved. Promotion in the honorary staff would be hastened, and the supposed need of an age limit would no longer be necessary, as men would be in full charge of wards at the time when they were most efficient for operative work, and they would demit office earlier. The junior men of the school would have a fresh stimulus to work, from the incentive of more speedy appointment. Hitherto the increase in work—treatment and teaching—has only been met by appointing—(1) Assistant surgeons, who, so far as clinical teaching is concerned, are practically *non est*; and (2) junior non-resident surgeons, which entails a probationary period of six months upon those who wish resident appointments—a grave increase in the expenditure of time and money for young graduates, which many of the best men cannot afford. Even the tutorial work is done by clinical tutors, so that the resident surgeon is debarred, in effect, from teaching the students who work in the ward to which he is attached. Surgeon, assistant surgeon, clinical tutor, resident surgeon, and non-resident surgeon for forty beds seems an unnecessary subdivision of labour.

Parochial Medical Officers in the Highlands.

THE Return "showing the Number of Medical Officers dismissed by Parish Councils in each Crofting County during each of the Seven Years 1895–1901, name of the Parish Council, and the cases in which the cause of dismissal was assigned," issued last year by the Scottish Office, and recently circulated, is a piece of interesting, although painful reading. It sets forth, with all the prosaic truthfulness of modern statistics, some of the unfortunate circumstances by which Parochial Medical Officers in the Highland Counties are surrounded. From Argyll, Inverness, Ross, Sutherland, Caithness, Orkney, and Shetland, come the same facts. During the seven years referred to in the return, in fact, since the institution of Parish Councils, sixteen Parochial Medical Officers have been dismissed without the possibility of appeal. In ten of these cases no reason was assigned for the dismissal, but in six, reasons were given for the action of the authorities.

The grievances of the Parochial Medical Officers in the north are very real. They are, in the first place, absolutely at the mercy of the Parish Councils. In many cases which have come under our notice, these bodies exercise their authority in a harassing manner, so as to render the position of Medical Officer a most unhappy one; and if he fails to satisfy their exacting demands, he may be dismissed without any reason being assigned. When ill or unavoidably absent, the Medical Officer has, at his own expense, to provide a substitute. Under these circumstances, it is not to be wondered that holidays are scarce for the parochial doctor. When his position is contrasted with that, for instance, of the Inspector of Poor, it is seen that there are wide differences between their tenure of office. An Inspector of Poor cannot be dismissed without the sanction of the Local Government Board, and there is never any difficulty about a holiday for him. While medical remuneration in general has in recent years considerably increased, the salary of the Parochial Medical Officer remains practically as it has been during the last twenty years. It surely is an anomaly that out of the absolutely inadequate salary which he receives, a *locum tenens* has to be paid by him, whenever he is absent, 4 or 5 guineas a week, in addition to travelling expenses and board.

In order to render the office of Parochial Medical Officer in the Highlands and Islands of Scotland worthy of retention, many changes are necessary. He should, in the first place, be provided with an adequate salary, and he ought also to have sufficient allowances, in order to render his attendance upon the poor of the parish thoroughly satisfactory. The means of obtaining an annual holiday should also be provided by arrangement for a substitute, and similar provision should be made to meet cases of illness on the part of the Medical Officer. The question of superannuation is one also requiring attention. In the case of men who have grown old in the service of their country, there should undoubtedly be some provision for a retiring allowance. But all these reforms, absolutely necessary as they are, sink into insignificance when compared with the injustice which exists in the present conditions as to termination of office. No Inspector of Poor can be dismissed without the sanction of the Local Government Board; and until this wrong is righted, the position of the parish doctor will remain a startling anomaly.

This is a matter which deserves the earnest attention of the representatives of the Universities in Parliament, and we desire very strongly to urge its importance upon their notice. By using their influence they would, without difficulty, obtain the redress of this wrong, and earn the gratitude of their medical constituents. It might be expected that the advanced section of the Liberal Party would gladly assist in such a good cause, but it is probable that they will be held in check by the official group; if we are to judge them by the action of the late Solicitor-General for Scotland, we can have no hope of redress, for that evangelical and philanthropic politician has shown such tyranny in the Ballachulish dispute, as to give us good reason for despair of him.

Treatment of Vaginal Hydrocele.

THE evolution of the treatment of hydrocele of the tunica vaginalis forms an interesting study in surgical therapeutics. Time was when the influence of Syme still dominated the Edinburgh School, that a hydrocele was inevitably injected with strong iodine, and violently shaken after the fashion of a terrier in dealing with a rat. The introduction of cocaine eliminated one of the drawbacks of the method, but the occasional failure to cure and the uncertain duration of the healing process led to the adoption of more certain curative procedures. Excision of the parietal layer of the tunica vaginalis was the first of these, and may be regarded as the direct outcome of a reliable wound technique. Although it might be objected to as being attended with a good deal of detailed work with scissors and artery forceps, it is certainly curative, and still remains the best and only method of treatment in hydroceles of long standing possessed of a thickened and rigid tunica. Less than five years ago, Winkelmann introduced the much simpler and more elegant procedure of turning the parietal layer of the tunica outside in. This method soon found favour, and is now extensively practised. It may be performed under a local anæsthetic. The sac of the hydrocele is exposed at its upper pole, and after being emptied is drawn out at the wound along with the testicle. The sac is then freely opened, and the parietal layer is evaginated, the cut edges being fixed to one another behind the testicle by one or two points of suture. The testicle and sac are replaced, so that the serous covering of the viscus comes into contact with the loose areolar tissue of the scrotum, to which it soon becomes adherent. The patient is able to go about in four or five days, and has no complaint to make save of a temporary œdema of the scrotum from the permeation of the cellular tissue with serous fluid. So far as we know, a case reported by Lauenstein is the only instance on record of relapse after this operation. We have ourselves performed it in a large number of cases during the last three years, and the results both immediate and remote are all that could be desired.

"Cockles and Mussels; alive, alive oh!"

WHEN Miss Molly Malone cried her wares through the streets of Dublin's fair city, she most certainly had no idea that her stock-in-trade were alive in more senses than one; or that the shell-fish, the vitality of which she vouched for, might actually be more dangerous to health sold alive than when *passé*. She apparently lacked patrons wealthy enough to have made it worth her while to sell oysters; otherwise the same had applied to them.

Unfortunately, cockles require but brief immersion in boiling water to rob them of their vitality, and lose in toothsomeness, and therefore in commercial value, if allowed to remain in boiling water for a longer period; while many of the living organisms associated with them only reach the critical point of life after more protracted exposure to the action of heat.

Unfortunately, also, most shell-fish seem to relish and to thrive amazingly on sewage. What oysters so plump and succulent as those provided with a strong, rich diet of nourishing sewage? Which cockles as tasty? The report of Dr. Collingridge, M.O.H. for the City of London, *re* two recent epidemics of typhoid in London, traced to cockles from Southend, tells of how the shell-fish are collected from the Maplin and Blythe Sands in the Thames estuary; placed in the creek at Southend for a day or two to rid them of sand; how the water of the creek at Southend is nothing but sewage; how numerous the *Bacilli coli communis et hoc genus omne*, although the *B. typhosus* itself escaped detection. Shortly after his report the cockles directly taken from Maplin and Blythe Sands were found to contain bacteria indicative of sewage contamination.

The deplorable results which followed upon the consumption of raw oysters at a ball in Stirling some years ago, and the more recent epidemic of typhoid in Winchester and other places in the south of England of similar origin, give witness to the reality of dangerous infection acquired from ingestion of the bivalves.

A law might certainly be passed making it a punishable offence to expose for sale, or to sell, shell-fish obtained from sewage-contaminated waters. The farmer who sends in a diseased bullock to the slaughter-house is liable to be punished; why should not consigners of oysters and cockles, gathered from, or stored in, filthy waters, every whit as dangerous to man as the cooked flesh of a "dwining stot," not be held responsible for knowingly offering for sale articles of possible danger?

Cows are tested with tuberculin. All proprietors of oyster and cockle-beds, and the middlemen who store them in salt water after removal from the beds and before offering them for sale, might reasonably be called upon to send from time to time a few oysters from their stock to a recognised bacteriological expert for report, and forward to each of their retail dealers a copy thereof, which could be shown on demand to customers when satisfactory; if of unsatisfactory nature, then the sale of uncertified stock would entail the risk of penal consequences.

"Munchen. med. Wchnschr." Annual.

THE sixth number of the annual humorous issue of our facile contemporary, the *München. med. Wchnschr.*, edited, as usual, *without* the aid of the ten members of the ordinary editorial staff, has just come to hand. The number has had especial care bestowed upon it, because it celebrates the fifty years' jubilee of the foundation of the journal. Several very amusing articles are to be found in its pages, and it is pleasing to find that the wit is not so broad as it has been upon some previous occasions. Dr. Hahnemann, junior, discourses upon "Advances in Theory and Practice of the Dilutions and Potencies-technique." In the course of his contribution the celebrated son of a more celebrated father discusses the maximal degree of dilution of ordinary ink with which one can write with. The weaker the stronger! From a clinique for nerve diseases comes a preliminary article by Dr.

Bahnbruch upon "The Treatment of Nerve Diseases with Metallo-dis-stherapie." The metal discs turn out to be gold and silver coins, and naturally prove very efficacious. After communications upon the therapeutic value of giving patients gymnastic exercises in rapid and loud articulation, and upon the morning tub of the pharmacopœia, there comes a clever article upon the therapeutic aspects of Wagner's *Der Ring der Nibelungen.*" The fact of Alberich having a cold in his head from getting wet while talking to the Rhine-maidens, is clearly shown by the following lines—

> "Feuchete Nass
> Füllt mir die Nase
> Verfluchtes Niesen.
>
> "Moisture wet fills my nose
> With curséd sneezing!"

which he complains of.

It would take too long to go over all the different items included, but one of the books reviewed purports to be an atlas and text-book upon corns. In it they mention that Plates 37 and 38 display a conglomeration of corns growing on the toes of an old bookworm both before and after he had had his feet washed. A description of the menu of a dinner at a psychological congress is rather funny—

> Hirnfraktionssuppe mit Lokalisationsklösschen, Häringsseelen, Forrel-len, Delboeuf à la mode. Gebackene Neuronen mit Kraepelin-sen, Somnambulis-Mus mit gebackenen Astral-Libchen, diverse Charcoterie, (viel alter) Käse."

Even the advertisements are peculiar; in one place we notice Ortho- Para- und Meta- humbug-ol.

Climates and Baths of Great Britain and Ireland.[1]

THIS book, which is the outcome of a report of a committee of the Royal Medical and Chirurgical Society of London, under the chairmanship of Dr. Theodore Williams, Dr. Horton-Smith being the honorary secretary, continues the description of the climates of Great Britain as the second volume of the series. In it the climates of London and of the Southern and Northern portions of Wales and of Ireland are taken up. The volume is beautifully illustrated with coloured maps, and supplied with numerous meteorological tables. It is also full of valuable and important facts connected with the local prevalence of diseases and vital statistics. It is a valuable mine of information regarding all these facts which every doctor should be in possession of or have access to.

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[1] Vol. ii. London, MacMillan & Co. Limited, 1902.

ORIGINAL COMMUNICATIONS.

PUBLIC HEALTH ADMINISTRATION IN FIFE: A TEN YEARS' RETROSPECT.

By T. G. NASMYTH, M.D., D.Sc., *Medical Officer of Health, Fife, Kinross, and Clackmannanshires.*

THE county forms a peninsula between the Forth and Tay, with the North Sea on the east. On the west it is bounded by Kinross, Clackmannan, and Perth: its old dependencies. The extreme length of the county is about 47 miles, and the average breadth about 18.

For county administrative purposes it is divided into four districts—Cupar, St. Andrews, Dunfermline, and Kirkcaldy—corresponding to its ecclesiastical divisions.

For statistical purposes it is included in the East Midland Division by the Registrar-General, and has sixty-two registration districts—Culross and Tulliallan being now included in Fifeshire.

As regards population, Fifeshire is seventh in order compared with the other counties, and fifth as regards area. For rate of increase of population, Fifeshire stands fourth, according to last census.

PHYSIOGRAPHY AND TOPOGRAPHY.—From Newburgh on the Tay, to Kennetpans on the Forth, there is a coast line of about 92 miles, broken and irregular with bays, harbours, and promontories. The surface of the county has no very striking physical features; none of its numerous hills attains to the dignity of a mountain, nor do its valleys reach any great breadth or depth, but still it is sufficiently broken up by hills to give it a picturesque diversity, and to relieve it from being monotonous. The hills are arranged generally into three sections.

The Northern Range, which runs into the Ochils, and lies between the Tay and the strath of the Eden.

The Middle Range, extending from Saline Hills and the Lomond Hills, along the middle line of the county, and forming a watershed with a declination running mainly north and south.

The Southern Range, not so well marked as either of the others, extends from Kinghorn by the Cullalo Range to Hill of Beath, and is bounded on the north by the valley of the Orr.

The highest hills are found in the Middle Range: West Lomond attaining a height of 1721 ft., and East Lomond 1466 ft. In the Southern Range the highest point is on the Saline Hills, 1209 ft.; and on the Northern Range the highest point is Norman's Law, 936 ft. The physical features are of importance in relation to questions of rainfall, water supplies, and climate.

The large number of small hills implies a corresponding number of valleys, and, as a consequence, a goodly number of streams, none of which is large or important. The principal stream is the Eden, about 24 miles in length, which wends eastwards from Strathmiglo to Guardbridge, where it runs into the North Sea. The course of the Eden is flat, the total fall being 300 feet, or a mean fall of about 1 foot in 422. The next important stream is the Leven, which extends from Lochleven to the sea at Leven, after a course of about 12 miles. The Leven has two main tributaries, the Orr, rising in the Saline Hills, and the Lothrie from the Lomond Hills. In addition to these there are numerous small streams, such as the Motray, Kenly, Dreel, Tiel, Lyne, Kelty, and Lochty. The principal streams have an easterly flow, and the smaller ones have a south-easterly or southerly flow, and this is to be accounted for by the trend of the hills being east and west.

The surface is diversified (in addition to hills and streams) by numerous small but picturesque lochs, amongst which may be specially noted the beautiful Otterstone Loch, Kilconquhar Loch, and Lindores Loch.

In addition to the lochs now in existence, extensive lochs existed at one period at Lochore, and on the plain in Collessie, Rossie Loch, which was partly drained in 1740, and completely some years ago.

RAINFALL OBSERVATIONS.—

TABLE I.

STATIONS.	Height.	No. of Years.	Years Specified.	Mean Annual Rainfall.	Mean for 24 Years ending 1883.
	Feet.				
Birkhill	130	19	1865–83	31·26	30·98
Mountquhanie	240	12	1872–83	31·81	30·10
Strathmiglo	615	5	1879–83	37·90	39·33
Auchtermuchty	179	13	1870–82	35·58	34·94
Springfield	200	13	1871–83	30·03	28·73
Balmullo	100	8	1875–82	31·74	30·30
St. Andrews	57	13	1871–83	31·23	29·85
Feddinch Mains	337	10	1866–75	29·59	30·74
Cambo House	50	10	1869–78	27·10	26·84
Elie	30	5	1875–79	35·00	31·12
Nookton	80	16	1860–75	29·82	31·32
Balfour Castle	127	16	1860–75	29·61	31·10
Burntisland	40	13	1863–75	27·30	29·85
Craigluscar	460	15	1869–83	37·40	37·07
Outh	890	12	1872–83	42·69	40·43
Keavil	150	4	1880–83	28·44	...
Lothrie Reservoir	700	14	1870–83	42·18	42·42

The rainfall at Lothrie Reservoir is the highest in Fife, and the explanation doubtless is, the Falkland Range of hills condenses the moist currents of air as they pass over it, sending down a mean rainfall of 42·42 in. towards Leslie. The high rainfall at Outh is in the same way due to the near presence of the Saline and Cleish Hills.

At Cambo House the lowest range occurs, and this is in accordance with the observations of the Secretary of the Meteorological Society, that all along the coast line, from Burntisland to Peterhead, the rainfall falls short of 30 in. This observation is doubtless borne out by the experience of agriculturists along the coast line from Burntisland to St. Andrews, that in seasons of little rain they suffer most.

POPULATION.—The sanitary history of a community is, of course, closely associated with its population, and the fluctuating conditions of increase and decrease must find a place in any such report.

At the first census the population of the whole of Fife was 93,743, and at the last census it was 218,840.

From 1801 to 1851 the decimal increase was 12·000. From 1851 to 1861 there was only an increase of about 1200; from 1871 to 1881, 11,196; and from 1881 to 1891 the increase was 15,415. In ninety years the population was doubled.

At the census of 1891, the population was 190,365; at 1901, 218,840, of whom 105,124 were males, and 113,716 females. The proportion of females to males for all Scotland was 105·7, while in Fife the proportion was 108·17.

The population for the whole of Fife increased since 1891 by 14·9 per cent.

The number of statute acres for all Fife is 322,844, equal to 504·4 square miles, giving 434 persons to each square mile, or 1·5 acres to each person.

There were 50,012 families residing in 48,241 houses, with 158,308 rooms.

The average number of persons per family was 4·38. There were 4·54 persons to each house, and 3·20 rooms to each house. The proportion of persons to rooms was 1·38.

County District Populations.

Cupar	15,749
Dunfermline . . .	25,550
Kirkcaldy . . .	28,943
St. Andrews . . .	15,726

The Burghs of Fife.—The large number of burghs is one of its predominant social characteristics. In all, there are twenty-eight burghs, eighteen of which are royal and ten police burghs.

The total burghal population is 132,874 for 1901, while at the census of 1891 the number was 107,051—a substantial increase of 25,821.

The total area in statute acres comprehended in the burghs is 9986.

For the whole of Scotland the number of royal burghs is seventy; so that in Fife there is over one-fourth of the total.

The total burghal population at 1901 was .	132,872
„ county „ „ .	85,968
Excess of burgh population . .	46,904

The population of the burghs varies extensively, Earlsferry having a population of 317, and Kirkcaldy a population of 34,079. There are only seven burghs having a population of 5000, and there are six with less than 1000.

These facts have an important bearing on public health administration in the following ways:—

First, there are separate Local Authorities for the administration of public health in the burghs and in the county, twenty-eight for burghs and four for the county; in all thirty-two Local Authorities for a population of 218,840. Considered entirely from an economic point of view, the arrangement is not one to be commended. Every Local Authority must have separate staffs — Clerks, Treasurers, Medical Officers of Health, Sanitary Inspectors. In some of the burghs with which I am acquainted there is a grouping together for the appointment of officials, but this is exceptional. At the present time, ten burghs appoint the same Medical Officer of Health, and another group of three have a similar arrangement. One group of five has the same Sanitary Inspector. It will thus be seen that, even in the appointment of sanitary officials, there is no uniformity, solidarity, or community of interest. The greatest differentiation of course, however, exists in the administrative bodies, acting under different Acts. The burghs, large and small, have the General Police Act of 1892 and the Public Health Act of 1897 to administer, while the county districts, with populations varying from 29,000 to 15,000, in round numbers, have certain powers under the Local Government Act of 1891 and the Public Health Act of 1897. Prior to the passing of the Public Health Act of 1897, county districts suffered extremely from want of power to deal with such important matters as lighting, scavenging, and cleansing. These defects have been to a great extent removed, and populous places, which do not wish to become police burghs, can have all the advantages which are claimed for these ancient civic institutions, without many of the inconveniences and excessive taxation which usually follow their creation.

A great sanitarian wrote: "In the practice we have not much to learn, but in the policy we have a great deal, in the concentration of the function, in the guidance of the practice, so that there may be uniform and united action of what ought to be in reality, as in name, the community; all the weapons of the sanitary armament ought to be stored in one armoury and wielded under one command."

These words well represent the consensus of opinion of those who take an intelligent interest in effective sanitary control. Is it practicable, is it possible, to have uniformity of policy and of practice amongst thirty-two separate administrations in one county with over 218,000 inhabitants? How would police administration for the detection and suppression of crime succeed in Fife if there were thirty-two separate authorities for the administration of the Police Acts, all acting independently and promiscuously? I am afraid, under such an indefinite and incoherent arrangement, criminal offences would mount up, the detection of crime would be a slow, laborious, if not impossible task, while the cost of police administration would reach a prohibitive rate which would soon call for legislation to remove an intolerable state of affairs. If crime cannot be stamped out under a multiplicity of authorities, how is it possible to stamp out epidemic disease, which often originates under conditions of time, space, and influences widely separated and removed from the area in which it manifests itself? This subject might be elaborated, but I only wish to suggest influences which act adversely in a community under widely differing conditions of public health administration.

By the Town Councils Act of 1891, the Local Authorities for burghs are the Town Councils, formerly called Police Commissioners under the Burgh Police Act of 1892. To those not conversant with public health administration in Scotland it may be explained that burghs, whether police or royal, have absolute independence, so far as the County Councils or their sanitary officials are concerned, and the adjectival prefix "County" in no sense indicates that their functions extend beyond the county district areas.

LANDWARD AREAS FOR SANITARY PURPOSES.—Prior to the Local Government Act of 1889, the parish was the unit for health purposes, however small it might be. In Fifeshire, with sixty parishes, there was an equal number of Local Authorities, all acting independently of each other, conducting their affairs with regard only to their own interests, carrying out schemes for water supplies, often at very great expense; whereas by a grouping of the units, the purpose would have been effected at infinitely smaller cost. The predominant result, however, was masterly inactivity, so that in Scotland, practically, public health administration was a dead letter. By the Local Government Act for 1889, the County Councils are permitted, and the County Councils of counties containing six or more parishes are required, to divide their counties into districts, each district comprising a group of parishes and a coextensive group of county electoral divisions.

In counties not so divided the area for public health administration is the county (exclusive of burghs which they may contain).

The Local Authorities for counties divided into districts are the District Committees, composed of County Councillors and Parish Council Representatives.

In divided counties the Councils have certain special powers, namely, to appoint County Medical Officers, Sanitary Inspectors, to make representations to the Local Government Board on matters relative to health administration, to make bye-laws for the prevention and suppression of nuisances, to enforce the Rivers Pollution Prevention Act, to administer the Food and Drugs Adulteration Acts.

The County of Fife is divided into four districts—Cupar, Dunfermline, Kirkcaldy, and St. Andrews, each with its own District Committee. The area and population of these districts has already been stated, but it may be convenient at this time to give certain additional information regarding these areas.

Cupar District comprises twenty parishes, with a total population of 15,749 at the census of 1901; the populations of parishes varying from 192 to 1939. In the district there are four royal and two police burghs.

Dunfermline District comprises ten parishes, with a population of 25,550. There are three royal and one police burgh.

Kirkcaldy District comprises thirteen parishes, with a population of 28,943. There are four royal and four police burghs.

St. Andrews District comprises eighteen parishes, with a population of 15,726. There are seven royal and three police burghs within the area.

Sanitary Staff.—There is one Medical Officer of Health for the county, who also is Medical Officer of Health for the districts. There were four Deputy Medical Officers, who acted for certain purposes, one being the inspection of shops at the dock and harbour of Methil. The assistant at Methil is still continued, and the inspection of shops must be carried out by one resident at the place. There are two Sanitary Inspectors for both Kirkcaldy and Dunfermline districts, and one for St. Andrews, and one for Cupar district.

The County Medical Officer, as already stated, acts in a like capacity for ten burghs: and in two burghs, Cupar District Sanitary Inspector acts as Burgh Sanitary Inspector. The Analyst for the county, under the Food and Drugs Act, is retained by a large number of the burghs. This arrangement will be referred to when the subject of food and drugs is considered.

FOOD AND DRUGS ACTS.—A new scheme for the administration of these Acts has been adopted, in order to ensure equal operation of them over the county. The Acts have been administered during the past eleven years in the landward parts of the county;

but it is obvious that there should be a continuity of administration over a wide area. The scheme is as follows:—

> The articles of food and the drugs of which samples shall be taken, and the places where and the time when these shall be taken, shall be fixed by the County Medical Officer, after consultation with the Analyst, as regards the landward part of the county and the burghs which combine with the County Council.
>
> All samples shall be taken by the County Sanitary Inspector of the district in the landward part of the district assigned to him as Inspector under the Public Health Acts, and in each of the burghs whose Local Authority agrees to his acting in their burgh as the Inspector or Officer for taking samples therein.
>
> The report of each analysis shall be transmitted by the County Analyst to the County Medical Officer, who, if it appears to him that it discloses *primâ facie* a contravention of the Acts, shall forward it to the County Clerk, by whom it will be handed to the County Procurator-Fiscal for prosecution.

A large number of burghs agreed to this scheme, and samples of food and drugs are regularly taken by the County Inspectors in the following burghs:—St. Andrews, Newport, Tayport, Newburgh, Auchtermuchty, Falkland, Cowdenbeath, Dysart, Leslie, Markinch, Leven, during the years 1892–1901.

In the landward district there were over fifty prosecutions under the Food and Drugs Acts. Nearly 1000 samples submitted for analysis.

RIVERS POLLUTION.—There are no large important rivers in Fife, but there are several large streams, all of which are fouled more or less with sewage and manufacturing pollutions. In Kirkcaldy district the condition of the Leven was very frequently reported on, and the state of the stream was so bad, that application was made to the Secretary for Scotland for authority to take action against manufacturing pollutions. Permission was granted, but no action was taken owing to a difference of opinion amongst the committee as to this course.

The Leven is very foul from distillery, paper mills, bleachworks, and other pollutions. The Orr which flows into the Leven is also much polluted, and several riparian proprietors are now pressing for purification of the stream by those discharging offensive matter into it. A considerable number of sewage purification schemes are either completed or are in progress, and this stream in a year or two will be much improved. The methods of purification which have been or are to be adopted are varieties of bacteria bed systems, continuous flow by revolving sprinklers, open septic tanks, and contact beds, land irrigation, etc. After the Orr is purified, it seems but fair that the Leven should also receive attention.

HOUSING OF WORKING CLASSES.—The problem of housing is not one of an acute nature in county districts, where so many empty houses are to be found, and no tenants wishing them. It is not my intention to discuss the housing question from the political or social point of view, but rather to indicate briefly what has been done to improve the houses of the labouring classes during the past ten years. The work done has simply been enormous, and if County Councils had been called into active existence for no other purpose than improving houses, the results attained would have justified their establishment. There are single houses, there are blocks of houses, there are whole villages, showing the reforming energy that has been going on. Houses have been closed, rased to the ground; others taken down and rebuilt. New houses have taken the place of defective ones; minor improvements carried out in providing rhones, conductors, drainage, ventilation under floors, ventilation and lighting of rooms, water supplies, sanitary conveniences, etc.; so that many a house, previously insanitary and unhealthy, has been made sanitary and healthy. It would be difficult to enumerate all the houses so treated, but the number must mount up to several thousands.

After the passing of the Public Health Act of 1897, it was possible to make regulations for the building of new houses, and now there is a Sanitary Code which demands a fairly high standard of sanitary sufficiency. During 1902, in Cupar district, plans for 24 new houses were examined by me, 250 in Dunfermline district, 150 in Kirkcaldy, and 50 in St. Andrews district. This represents one year's work.

And as in nearly every place important additions or alterations were made, it can be understood how much better the future houses of the working classes will be than they were in the past.

WATER SUPPLIES.—The question of water supplies presents itself in various ways to Local Authorities. It may be for a single house, when the owner of the house is held responsible; it may be for a group of two or more houses, in which case who is responsible may have to be determined by the Sheriff; or it may be for a village or town; and the principal question will be whether the supply is to be provided for a special water supply district, in which case those receiving the water will be assessed for it. The Local Authority may, however, for special reasons, not form a special water supply district, and introduce water to the community requiring it, and charge the cost to the general sanitary rate, which is levied over the whole district of the Local Authority. It is also possible to proceed under a special Act, that of 1891, and which was passed to meet special circumstances. Under this Act two different rates may be levied: one called the general rate, imposed over all the district by the Local Authority, and which cannot exceed 3d. in the pound; and the other called the domestic rate, to which no limit is fixed.

This Act was adopted in Dunfermline district in 1892 to meet the special circumstances existing in the village of Crossgates. As a result of this, Crossgates Special Water Supply District was abolished.

At the beginning of 1892 there were three Special Water Supply Districts in Kirkcaldy, nine in Dunfermline, four in St. Andrews, and four in Cupar; while at the beginning of 1901 there were five in Kirkcaldy, ten in Dunfermline, seven in St. Andrews, six in Cupar.

In addition to new districts, many improvements have been carried out on existing ones. In Dunfermline district, Crossgates, Aberdour, Lassodie, Queensferry, Kincardine, supplies have been much improved, and a very large scheme was carried out for Kelty.

In Kirkcaldy district a very large scheme for the supply of water to Wemyss and the Burgh of Buckhaven, Methil, and Innerleven, was carried out.

In Cupar, negotiations have been going on for some time to obtain water for the special districts of Kettle and Auchtermuchty.

In St. Andrews district, special districts were formed for Guardbridge, Dunino, and Largo, and extensive additions to the supply of St. Monans were effected.

The improvements on water supplies of individual houses that have been carried out have been enormous, and a very great deal might be written about this. The number of samples of waters analysed amounts to over 500.

The question of water supply for populous places is becoming year by year more complicated, owing to the difficulties experienced in obtaining water in sufficient quantity and quality. Populations are increasing, while the available sources of supply are diminishing; and there are many villages in Fife urgently in need of water, which cannot be got. Under the old parochial system of public health administration, each separate Local Authority acted for itself, without considering the necessities of its neighbours, and as a result many small costly indifferent schemes were carried out.

If there had been a grouping of the units for sanitary administration, as now exists, these objectionable features, the result of an incoherent heterogeneous policy, would not have occurred, and larger schemes at less cost to the ratepayers would have resulted. The future, however, rather than the past, has to be considered, not only in Fifeshire, but all over Scotland; and how are communities, growing out of their water requirements, to be provided for? In my opinion, one of the most pressing sanitary problems is the control of present and future sources of water supply. I do not refer only to that control which will secure them against pollution, but also to a control which will secure them against misuse and misappropriation, and make them subserve the greatest number of people at the smallest cost to the consumer. Water is essential for life, just as air is. Air, so far as I know, is not supplied at so much per pound to the consumer. It appears to me that water should be supplied, if not for nothing, at the lowest possible charge; the charge to be purely at the cost of the engineering scheme. One of the most sagacious Prime Ministers, many years ago, put in the forefront of his policy, legislation for air, water, and housing of the working classes. Within recent years there has been legislation for water, but not in the direction of what I consider is the most pressing necessity—for to secure sources of water supply for domestic purposes in the first instance, and for trades purposes in the second.

It has been established in a recent private Water Act, that those living nearest an available source of water supply have the first right to it. In my experience, this principle has been too often neglected, and I have known Local Authorities stepping in and securing water supplies for themselves, to the total deprivation of communities living close to the gathering grounds from which the water was taken. Populous places in Fifeshire, whenever they attain a sufficient population, are exceedingly desirous of forming themselves into burghs, and thus cutting off their connection with the county, and being relieved from taxation for county roads and bridges, which they must use. If they do not possess sufficient water supplies, they must seek for them in the county. Why should they be allowed to secure water supplies, and deprive the inhabitants of the county of their supplies, without compensation being made? The compensation should be the provision of water to country places, at the same rate as is charged to the burghal inhabitants.

The expense of obtaining water supplies, apart from the mere engineering scheme, is too often enormous. Fishing rights, sporting rights, unexhausted manure, and many speculative claims, have all to be paid, at a price which often runs the ratepayers into a large bill of costs, for what is an absolute necessity for life. The housing of the working classes at the present time is a much talked of problem, and which, without doubt, is a pressing one for cities; but the provision of water, at a cheap rate for all houses, is as clamant and necessitous a question as the former, and little is said about it. The demand increases; the sources of supply diminish. One authority steps in and takes away the rights of another. Numerous costly, indifferent schemes for water supply, which could be much more cheaply carried out if joint action were possible, as in the case of isolation hospitals, where the Local Government Board can compel different Local Authorities to combine for their provision. Legislation, in my experience, to deal with public water supplies, is urgently needed for the control of sources of water supply, the provision of water for large areas, embracing burghal and landward areas, and the reduction of the cost of schemes to the lowest possible limit.

In regard to special water supply districts, it is important to know what principles are involved, which may guide Local Authorities and their officials in promoting such schemes. The following three were laid down by a highly esteemed Sheriff-Principal in Fifeshire:—

"1. The existence of a population for which a combined supply is necessary, or at least highly expedient for use on sanitary grounds.

"2. The approval, express or tacit, not necessarily of all, but at least of a reasonable proportion of those who will, or at least may, benefit by the supply, and who are to pay the assessment.

"3. A district which forms a natural and convenient area for a combined scheme."

As regards the first, there can be no hard-and-fast rule about population. The main point is: Is water needed, and can it be supplied best by the proposed scheme? Regarding the approval of those who are to bear the assessment, the Act provides for the requisition being signed by ten ratepayers, and therefore does not take into contemplation that unanimity the Sheriff desiderated. If the Local Authority are satisfied that the water supply district should be formed, I do not think the voice of the man in the street should be listened to. The Local Authority are responsible for the health of the community, and, so far as possible, Sheriffs ought to support them.

After the district has been formed, and all the necessary works carried out, the levying and collecting of the special water assessment cause trouble and expense, especially in counties where the areas formed are small and numerous. From the initial difficulties of the requisition, to the completed scheme, with its specialised assessment, this method of water supply is not, in my opinion, a good one, but how can it be improved upon? is the question that naturally arises.

SPECIAL DRAINAGE DISTRICTS.—At the end of 1892 there were nine special drainage districts in the county, and at the end of 1902 there were sixteen. Improvements and extensions were carried out on many of the already formed districts, namely, Kelty, Aberdour, Kincardine, Limekilns.

SPECIAL LIGHTING AND CLEANING AREAS.—Under the Public Health Act of 1867, there was no special power to cleanse villages and charge the cost to those directly receiving the benefit. Scavenging was done, however, in a haphazard way, but there was great difficulty even to do so. By the Local Government Act of 1894, cleansing and lighting areas may be formed, and certain clauses in the Burgh Police Act of 1892 adopted.

The following abstract shows what clauses can be adopted and the powers they confer:—

Abstract of Adoptive Clauses of Burgh Police Act.—Sec. 107.—Dust, night soil, ashes, etc., to be collected and be vested in Local Authority. Contents of ashpits, etc., to be removed by Local Authority.

Sec. 108.—Local Authority may provide lands, etc., for deposit of refuse, etc., collected.

Sec. 109.—May provide covered carts for removing refuse, etc.

Sec. 110.—May erect public conveniences.

Sec. 111.—Streets may be watered, wells, etc., provided.

Sec. 112.—Provides for employment of scavengers.

Sec. 113.—Imposes a penalty for obstructing scavengers.

Sec. 114.—Imposes a penalty on persons other than scavengers removing dirt.

Sec. 115.—Provides for the sweeping and washing of common stairs. Sweeping and washing of common passages.

Sec. 116.—Provides for [footways] to be swept by occupier.

Sec. 117.—Provides that common stairs and houses let for short periods to be cleansed by owners.

Sec. 118.— . . . Medical Officer or Inspector may enter and cleanse dwelling-houses, at expense of owners.

Sec. 119.—Imposes penalty on keeping dwelling-houses in dirty condition.

Sec. 120.—Provides for areas, etc., to be cleansed by occupiers.

Sec. 121.—Provides that stables and byres be kept clean.

Sec. 122.—Enacts that horse and cow dung be kept off the streets.

Sec. 123.— . . . Dungsteads, etc., to be cleaned out.

Sec. 124.—Provides as to removal of dung.

Sec. 125.—Imposes penalty for conveying offensive matter at improper times.

Sec. 126.—Provides as to laying down dung on fields, nursery or garden grounds.

Sec. 127.—[District Committee] may make bye-laws.

Sec. 253.—Provides for the construction of ashpits, etc., and use of same.

Sec. 254.— . . . Owners to remove cesspools after notice.

Sec. 255.—Gives power to enforce conversion of privies into water-closets.

Fifteen lighting and cleansing areas have been formed, and the sanitary condition of the villages where the areas have been formed have been immensely improved.

Dairy Sanitation.—Fife is not an outstanding dairy county, but there are a large number of dairies. In Cupar district there are over 80 dairies with 595 cows; in Dunfermline district, 118 with 1753 cows; in Kirkcaldy district, 171 with 932 cows; in St. Andrews district, 70 with 908 cows.

Regulations were made for the four districts, practically the same to begin with, but in Dunfermline district a new code was passed in 1891 with important additions. The following are the principal improvements:—

In every cow-shed there shall be provided a space not less than 600 cubic ft., and a minimum floor space of 40 square ft., to each adult animal stalled therein.

A purveyor of milk, or person selling milk by retail, shall not use as bedding for the cows or other animals in any cowshed any material which has been previously used as bedding for horses or other animals, nor any sawdust, wool refuse, moss litter, or other material which is likely to cause contamination of the milk.

No purveyor of milk, or person selling milk by retail, shall wash, scald, or keep any milk vessel or utensils in any byre, dwelling-room, or sleeping apartment, or in any apartment used for washing or boiling bed or body clothing, or in any boiler, tub, or other receptacle which is used in such process of washing or boiling.

No purveyor of milk, or person selling milk by retail, shall in any apartment where milk is kept or exposed, or where milk vessels are washed or kept, wash, or permit any other person to wash, any bed or body clothing, or hang up such clothing to dry.

BYE-LAWS AND REGULATIONS.—There are only two common lodging-houses in the county, and there are bye-laws for these. There are bye-laws for slaughter-houses, offensive trades, pig-styes, new buildings, cleansing in scavenging districts. There are no bye-laws for tents, vans, and studs, or for houses let in lodgings.

INFECTIOUS DISEASES SINCE 1892.

TABLE II.

	Scarlet Fever.	Enteric Fever.	Erysipelas.	Puerperal.	Continued.	Diphtheria.	Smallpox.	Typhus.	Totals.
1892	477	48	61	5	1	73	3	0	663
1893	255	94	66	5	0	100	8	0	528
1894	461	81	107	2	3	124	12	0	790
1895	467	97	114	10	5	100	1	0	794
1896	454	54	120	4	1	88	0	0	721
1897	381	39	78	6	3	50	1	0	558
1898	549	39	80	5	0	38	0	1	712
1899	285	99	86	10	0	69	0	1	559
1900	224	69	93	6	0	66	2	1	461
1901	262	90	92	5	0	45	1	0	495

SCARLET FEVER.—In the ten years there were 3815 cases notified. While there were many features of interest in connection with these cases, the broad facts can alone be referred to. The two salient features which I shall comment on are the age distribution of the cases, and the incidence according to months of the year.

The greatest number of cases occurred in the months of October, next September. March, April, and May had the lowest numbers. In one year the greatest number of cases occurred in June; in others, November and October; but over ten years, the highest number was in September. According to ages, the cases occurred as follows:—

1 year	187
2 years	223
3 „	285
4 „	321
5 „	365
6 „	334
7 „	307
8 „	273
9 „	224
10–15 „	587
15–20 „	197
20–25 „	100
25 upwards	139

The type of disease was during these years very mild, and deaths from scarlet fever were few.

SMALLPOX.—In the ten years' period under review there were twenty-eight cases of smallpox notified. In 1894 the largest number of cases, namely, twelve, occurred. The next largest was in 1893, when eight occurred. The cases in 1893 were not of great interest, except that one of the outbreaks occurred in a crowded navvies' hut, and only two men were affected. Another case occurred in a village, the man affected being a tramp. His peregrinations were traced from Edinburgh to Alloa, Kirkcaldy, Thornton, Woodend, New Inn, Drumeldrie, Largo, Ceres, Star, Markinch. No other case followed. The outbreak in 1894 in the village of Kirkland was very serious. All the persons affected were employed in a flax mill, the medium of infection being Russian flax, which in my experience is a very likely source. Another outbreak occurred at East Wemyss. Only two fresh cases followed of those who had been in contact—*one who refused to be revaccinated, and an infant six weeks old, in whom vaccination did not take.*

The experience of smallpox of these ten years is, that if you get the cases isolated at once, the contacts vaccinated, and the house and infected articles thoroughly disinfected, the outbreak will soon be stamped out. There must be no delay, no hesitation in acting, or in diagnosis. The greatest mistake that can be made is to treat smallpox as chickenpox. It is safe to treat chickenpox as smallpox, so far as the public are concerned.

(*To be continued.*)

INSANITY IN RELATION TO FERTILITY.

By JOHN MACPHERSON, M.D., F.R.C.P.Ed., *Commissioner in Lunacy for Scotland.*

THE problem of the increase of insanity has given rise for many years to much speculation on the part of those who are qualified to speak authoritatively, as well as on the part of writers who have approached the subject with the object of emphasising their opinions on the gravity of one or other of the social evils which prevail in modern communities. Thus we find that national excitement, political agitation, intemperance in drink, sexual excess, poverty, and even religious systems, are seriously brought to account as primary causes. To any one accustomed to view these and cognate social phenomena from the standpoint of the biological sciences, such explanations are at best trivial. Effects of this kind may, it is true, in a slight degree and temporarily, affect the occurrence of insanity in predisposed persons, but they can no more affect the tendency to insanity in a community than they can alter the colour of the hair or the physical conformation of the body. It may be impossible in the present state of our knowledge to fully explain the comparative prevalence of insanity or of any similar constitutional disease in a community, but it is possible to divert public attention from vague and speculative theories founded upon erroneous conceptions of a moral and physical character, to the more scientific and more profitable channel of biological inquiry. The only satisfactory method of attaining this end is by a study of the vital statistics of a country or community. For this purpose I have chosen Ireland, because the apparent increase of insanity there in proportion to the population is marked, because the social conditions in that country as respects emigration and migration are less complex than in Great Britain, and because the relations between industrial and rural centres are more simple than in either England or Scotland. What is true of Ireland in regard to insanity could be shown to be equally true of England or Scotland, but the presentation of the subject would in the latter countries be complicated by the factors referred to to an extent which might render the exposition less convincing.

The following table shows the proportion of lunacy and idiocy to the population of Ireland during the past fifty years. I have, after some dubiety, resolved to treat idiocy and insanity together: there would be great difficulty in correctly differentiating them as given in the Census returns, and although their distinction may be important, their relationship is also too important to be overlooked:—

Years.	Lunacy and Idiocy.	Population.	Ratio of Lunacy and Idiocy to Population.
1851	15,054	6,552,385	1 in 657
1861	21,163	5,798,967	1 „ 411
1871	26,268	5,412,377	1 „ 328
1881	28,187	5,174,836	1 „ 281
1891	36,133	4,704,750	1 „ 222
1901	44,884	4,458,775	1 „ 178

It is not pretended that a statement such as the foregoing is either accurate or uniformly correct. For instance, the methods taken in the earlier years to ascertain the amount of mental defect in the country may have been less perfect, and there may have been less willingness among the people to give the desired information; again, the figures in the latter years are probably short of the actual condition. On the other hand, it may be pleaded that the information is the best available, that the figures are not likely to be understated, and that for general purposes they may be accepted as they stand.

It will be observed that while the population of Ireland has decreased in fifty years by 31·9 per cent., the number of the insane has increased 198 per cent. However inaccurate the Census returns may be, there is here a broad enough margin within which to decide safely that the number of persons recognised as insane in proportion to the population has largely increased.

We know that the decrease in the population has been due to emigration. In the twenty years ending 31st March 1901, 1,199,098 persons left Ireland. Of that number, 593,869 were males, and 605,229 were females. As might be expected, 90·8 per cent. of the emigrants were between the ages of 15 and 55, which limits wholly include the extremes of the reproductive period of life in both sexes.

The effects of this extensive emigration are the following:—(1) Depletion of the population; (2) a lowering of the marriage-rate; (3) alteration of the age distribution of the population; (4) lowering of the birth-rate; and (5) depending upon the lowered birth-rate a diminished natural increase of the population.

These five factors acting in sequence and conjunction disturb the normal stability of the population, and induce conditions which are favourable to the production of insanity.

The depletion of the population, as has been seen, chiefly affects its sexually efficient units, and by so doing tends to lower the marriage-rate among the remaining sexually potent units in the population. The growing disinclination to marriage is one of the most observable features in the vital statistics of the country.

In 1881 the number of married persons over 15 years of age per cent. of the population was 41·9; in 1891, 39·0; and in 1901, 37·7. In 1881 the number of married women between 15 and 45 years (the child-bearing period) was 37·1 per cent. of the women living between these age periods; in 1891 it was 33·6; and in 1901 it had fallen to 32·5. The number of married men over 20 years of age per cent. of the population in 1881 was 52·0; in 1891, 48·5; and in 1901, 45·3. These figures substantiate the fact that marriage for the last twenty years is less frequent in Ireland.

That this diminution in the marriage-rate is largely dependent upon the depopulation by emigration, will be seen by referring to the following table:—

TABLE I.

Counties grouped in order of Marriage-rate per 1000 of Population, 1891–1901.		Decrease per Cent. in Population of same Groups between 1891 and 1901.
Ireland	5·0	5·23
Antrim	6·3	+ Increase
Dublin		
Down		
Londonderry		
Wicklow	4·7	8·4
Armagh		
Limerick		
Cork		
Wexford	4·1	9·7
Louth		
Carlow		
Monaghan		
Tipperary		
Fermanagh		
Kildare		
Donegal		
Tyrone		
Kilkenny	3·8	10·3
Cavan		
Longford		
Kerry		
Waterford		
King's		
Meath		
Queen's		
Leitrim		
West Meath	3·4	10·4
Mayo		
Sligo		
Roscommon		
Clare		
Galway		

It may be objected that this table does not show a constant correlation throughout between the supposed cause and its effect.

That may be so, but it is sufficiently striking to justify the hypothesis. It must be remembered that other causes are also at work besides emigration. There is migration to a large degree in certain districts, and there is seasonal or temporary migration of males, to deal with which local knowledge is necessary. There are also probably other disturbing social influences of which I am not able to speak. The broad fact, however, remains, that the prominent factor in the vital statistics of Ireland is emigration, and that it is associated with a declining marriage-rate.

The relation between emigration and marriage is not at first sight quite clear. There are, however, several conjectural explanations which taken together may explain it. The large outflow from the country of young women of marriageable age no doubt limits the sexual choice of the males to some extent; the young men who remain behind are many of them probably retained at home by other domestic responsibilities which prevent marriage; the standard of domestic comfort in Ireland is, as in all other countries, increasing faster than the power of acquiring wealth by certain classes, while the depletion of the rural population renders it more difficult for those who have no capital or land to marry with the prospect of being able to live up to the recognised standard of social comfort; finally, among those of both sexes who remain behind, there must be a tendency to the accumulation of persons who, being physically unfit for emigration, have therefore a less chance of being sexually selected for marriage. This disinclination to marry is not confined to Ireland, but is equally common in the Highland and rural counties of Scotland where depopulation is going on to any marked extent. We are justified then in believing that emigration is naturally succeeded by a lowered marriage-rate.

At first sight it might appear as if a decrease in the number of marriages should imply a decrease in the probable number of the unions of persons predisposed to insanity. A little consideration will show that this is not the case. It is commonly supposed that the emigrants, over 70 per cent. of whom are of reproductive age, are less liable to become insane than those who remain behind. There is not a scrap of evidence in support of such a contention. Nor is there any evidence for the belief that only the best, *i.e.* the most fit in every respect, emigrate. Emigration in Ireland is determined by the exigencies of the social conditions, and is, biologically, purely a random selection. Moreover (although idiots and imbeciles may be excluded), there is no known reason why the person who through the germ or sperm cells conveys the latent potentiality of transmitting the neuropathic constitution, or the person who is mentally and physically of the neuropathic constitution, should not emigrate. I assume, on the part of my readers, a belief in the doctrine that the neuropathic constitution is inherent or innate, and is no more an acquired constitution than are the gouty or tubercular diatheses. Without such an understanding, the arguments used here can only appear futile.

In order to illustrate the actual decline of the marriage-rate in Ireland, the following tabular statement has been prepared. By the term "sexually efficient" is meant all persons married, or widowed, in the population between the ages of 15 and 55. By the term "sexually inefficient" is meant all unmarried persons, persons under 15 years of age, and persons over 55:—

TABLE II.

	Sexually Inefficient.	Per Cent. of total Population.	Sexually Efficient.	Per Cent. of total Population.
1861	4,354,931	75·8	1,444,036	24·9
1871	4,137,758	76·4	1,274,619	23·5
1881	4,008,416	77·4	1,166,420	22·5
1891	3,675,314	78·1	1,029,436	21·8
1901	3,519,380	78·9	939,395	21·0

We see, then, a steady, gradual fall in the actual number and proportion of the sexually efficient units of the population during the past forty years. Were such a fall accompanied by a corresponding decrease in the sexually inefficients, then it might be that the conditions might remain unaltered; but as it is, we have to do with an equivalent rise in the numbers of the sexually inefficients. This means, practically, a subtraction from the class of the sexually efficient, and an addition of the numbers subtracted to the class of the sexually inefficient. Thus, in the population of Ireland in 1861, seventy-five out of every hundred were sexually inefficient, and twenty-five efficient; while in the population of 1901, seventy-nine in every hundred were inefficient, and twenty-one efficient.

The next effect in the series of causes to be considered is the change produced in the age distribution of the population. This change is best shown in tabular statement as follows:—

	1871.	1881.	1891.	1901.
Under 15 . .	35·4	35·0	32·5	30·3
15–55 . . .	50·7	51·4	53·9	55·3
Over 55 . . .	13·8	13·4	13·4	14·1

From this it will be seen that the proportion per cent. of the population under 15 is decreasing, and the proportion over 15 is increasing. The effect of a low birth-rate and a high death-rate is to raise the average age of the population. The Irish death-rate, outside Dublin and Belfast, is not high (18 per 1000), but the high emigration rate has, in conjunction with the normal death-rate, the equivalent effect of a mortality greatly in excess of the birth-rate. Consequently the age distribution of the population is being rapidly altered in the direction of increasing the number of people living over 15 years of age. Now it will be found, on referring to the reports of the Inspectors of Lunacy for Ireland, that 87 per cent. of persons admitted to asylums in that country are between the ages of 20 and 55 years, and it follows that an accumulation of people between those ages in the population must necessarily increase the proportion of acquired insanity. Not only so, but the greater the number of persons whose age is under 15 in a population, the smaller the proportion of acquired insanity. For such persons are not liable to acquired insanity, and they swell the proportion of the population upon which the estimate of insanity is formed. There is another reason, which will be considered immediately, in connection with the lowered birth-rate.

The average birth-rate in Ireland is about 23 per 1000, and varies from 30·9 in Antrim, 29·6 in Dublin, and 29·2 in Down, which are the three highest, to 17·4 in Cavan, 17·3 in Fermanagh, and 16·8 in Roscommon, which are the three lowest.

The Irish birth-rate is now among the lowest in Europe, with, perhaps, the single exception of France. Such low birth-rates are usually attributed by authorities to four causes—(1) Voluntary celibacy; (2) postponement of the age of marriage; (3) facility for divorce; (4) the use of artificial means to check conception. In a Roman Catholic country like Ireland, the two latter causes are by the rule of the Church excluded. No doubt the influence of the Church may to some extent favour the first, but it cannot affect the second. Unfortunately, the returns of the Registrar-General for Ireland do not give details as to the ages at which marriages are contracted, so that this cause cannot be directly investigated in its relation to the birth-rate. We are therefore compelled to attribute it to the voluntary celibacy of a portion of the population.

We can best treat the question of the birth-rate in this connection by taking it up in the form of the natural increase of the population. This is the more legitimate with respect to Ireland, for the death-rate is, outside of the larger urban centres, very low. It varies per 1000 from 25 in Dublin, 22·8 in Antrim, and 20·6 in Down, the three highest, to 13·7 in Longford, 13·5 in Donegal, and 12·7 in Leitrim, the three lowest. The natural increase of the population in Ireland (excess of births over deaths) was in 1898, 48 per 10,000 of the population. It varied from 85 in Down, 80 in Antrim, and 78 in Kerry, the three highest, to 9 in West Meath, 3 in Meath, and 0 in Wexford, the three lowest.

As the death-rates in the three latter counties were 17·5, 16·9, and 19·7 respectively, and as in the county of Kerry, the third highest in point of birth, it was only 14·2, it is evident that the small natural increase of population is due to a low birth-rate, and not to a high death-rate. I proceed next to discuss the question of the relation of this natural increase to insanity. For this purpose I have grouped the counties in the following table in the order of their excess of births over deaths per 10,000 of the population, and compared it with the number of lunatics and idiots in each group per 10,000 of population:—

TABLE III.

Counties.		Natural Increase per 10,000. 1891-1901.	Lunatics and Idiots per 10,000. 1901.
GROUP I.	Down Antrim Donegal Galway Kerry Monaghan Mayo	58·5	49·4
GROUP II.	Leitrim Londonderry Longford Dublin Armagh Cork Wicklow Limerick Sligo Louth	41·0	55·2
GROUP III.	Kildare Cavan Clare Tyrone Roscommon Tipperary Waterford Carlow Fermanagh	34	64·7
GROUP IV.	Kilkenny Queen's King's West Meath Meath Wexford	26	69·0

In the foregoing table (III.) the counties have been grouped in order as follows:—From 0–20, from 20–40, from 40–60; and over 60 according to the proportionate numbers of their natural increase. The correlation appears distinct, but there are a few discrepancies which mar the results. For instance, Dublin, in respect of its small proportion of insane, should be in the first group, and Waterford, for the opposite reason, in the fourth group. I have therefore arranged the counties in the order of the number of their lunatics, and compared them with the natural increase :—

TABLE IV.

Counties.		Lunatics and Idiots per 10,000. 1901.	Natural Increase per 10,000. 1891-1900.
GROUP I.	Dublin	37	48·5
	Antrim		
	Down		
	Londonderry		
GROUP II.	Kildare	53	49·4
	Kerry		
	Armagh		
	Wicklow		
	Donegal		
	Fermanagh		
	Galway		
	Tyrone		
	Leitrim		
	Mayo		
	Roscommon		
	Sligo		
GROUP III.	Longford	63	33
	Louth		
	Queen's		
	West Meath		
	Cork		
	Limerick		
	Cavan		
	Monaghan		
GROUP IV.	Carlow	74	29
	Kilkenny		
	King's		
	Meath		
	Clare		
	Tipperary		
	Wexford		
	Waterford		

In the foregoing table (IV.) the proportions range for the counties, as regards lunacy, from 34·6 for Dublin, 29·6 for Antrim, and 46·2 for Down, the three lowest, to 73·1 for Clare, 78·5 for Meath, and 95·9 for Waterford, the three highest. We have again a striking resemblance to correlation, but the curves are not coincident throughout, as may be observed on comparing the two tables. There is therefore a connection between the rate of natural increase and the proportion of recognised insanity in the population, but it is affected by some other factor which has yet to be ascertained. This disturbing factor is, I believe, the immigration of young adults into the denser urban populations. Such a factor is almost impossible to ascertain accurately, and no attempt is made to do so in the Census returns. It is, however, quite apparent that the cities of Dublin and Belfast have grown in ten years much faster than their ordinary natural increase. Thus the natural increase of the county and of the county of the city of Dublin in ten years was only 33 per 10,000, but the actual increase was more than 752 per 10,000. Among those immigrants a large proportion must necessarily have been young adults of marriageable age. Similar facts are true of many other districts enumerated, although, as a general rule, outside the larger urban centres the amount of emigration is greatly in excess, not only of immigration, but also of the natural increase of the population. Should the hypothesis I am formulating have any foundation in fact, the disparity between Groups I. and II. in Table IV. can easily be accounted for by the large immigration of young adults into the counties of Dublin, Antrim, Down, and Londonderry. This immigration would more than compensate for the smaller natural increase of Group I. The smaller excess of births over deaths in the first group of Table IV. is due to the larger mortality, and especially the larger infant mortality in the thickly populated urban centres. Except in such centres as Dublin, Antrim, Down, and Londonderry, and in some of the more rural counties, such as Kerry and Mayo, I have been unable to establish any correspondence between mortality in infancy and childhood and lunacy or idiocy separately or combined. It seems clear, however, that it may act as an eliminative agency in the denser centres of population; but it is equally clear that in such counties as Wicklow, Donegal, and Fermanagh, with a comparatively low proportion of insanity and low death-rates under 5 years, or in such counties as Meath, Monaghan, and Cavan, with high insanity and also low infant mortality rates, the attempt at comparison fails. It is only reasonable to suppose that in the mortality caused among infants and young children in large towns by developmental, constitutional, and zymotic diseases, a certain proportion of persons are eliminated who would otherwise have grown up and become insane, but the same might with equal truth be asserted of another hypothetical proportion who, if they had lived, would have grown up and become good citizens. We cannot, therefore, account solely for the apparently smaller proportion of the insane in the counties of Dublin, Antrim, or Down, on the ground of the high infant mortality in Dublin and Belfast, any more than we can show that infant mortality accounts for the apparent disparity in the proportion of insanity in the counties of Wicklow and Waterford.

So far, then, we have cursorily reviewed the following features in the vital statistics of Ireland with relation to the apparent increase in the number of persons recognised as insane:—(1) The depopulation of the country; (2) the low marriage-rate; (3) the alteration in the age distribution of the population; and (4) the low natural increase. I have shown reason why the mortality in infancy and childhood, except as regards the urban communities, may be discounted, and I have endeavoured to show how certain disparities in the figures may be accounted for by the immigration of young adults into the larger town centres. The whole drift of the argument points to the conclusion that the comparative prevalence of insanity depends upon the fertility of the population. In the following table the counties have been grouped in the order of the average birth-rate for the ten years 1891–1901:—

TABLE V.

Counties.		Lunatics and Idiots per 10,000. 1901.	Birth-Rate per 1000. 1891-1901.
GROUP I.	Antrim Dublin Down Kerry Londonderry Mayo Armagh	44·7	24·9
GROUP II.	Limerick Cork Galway Waterford Kildare Donegal Louth Tipperary Wexford Wicklow	62·6	20·9
GROUP III.	Clare Kilkenny Kings' Leitrim Sligo Carlow West Meath Tyrone Queens' Longford Cavan Fermanagh Roscommon Meath Monaghan	63·6	19·1

The proportionate rates extend from Monaghan 17·2, Meath 18·5, and Roscommon, the three lowest, to Antrim 29·5, Dublin

27·4, and Down 26·7, the three highest. This table has been introduced, not for the purpose of sustaining an independent argument, but in order to complete the series of arguments. The grouping of the figures cannot be decisive in any one table, because of such numerous disturbing elements as emigration, immigration, migration, and local conditions, of which it is difficult or impossible to obtain information. The local distribution of disease, and the local perturbations of an otherwise stable population, are necessary factors to possess knowledge of before any attempt at an accurate explanation of vital phenomena can be undertaken. Therefore, such a paper as this can only suggest aline of inquiry. The fifth feature in the vital statistics is the relation of the birth-rate to the comparative prevalence of insanity in different parts of the country.

All the foregoing features resolve themselves into one factor, namely, a diminished fertility of the population, and a strong presumption that this diminished fertility tends to favour the occurrence of such constitutional affections as insanity. From what has gone before, I need scarcely explain that in this sense fertility must be taken broadly to include, not only a lowered birth-rate, but also the low natural increase of the population and the emigration of young adults. The question of the relation of diminished fertility to the greater prevalence of constitutional diseases is somewhat complicated. It might be argued, and probably with much force, that infertility presents too limited an offspring to the action of natural selection, and that in two directions:—(1) too few favourable units are produced to benefit the species; and (2) the elimination of the unfit is not so complete, owing to their paucity, as it would be if a larger number were produced.

It might also be argued that the proportion of those liable to suffer from constitutional disease is apt to be greater where the offspring, owing to infertility of the parents, is smaller than it would be in a highly fertile population. The line of such a train of reasoning is indefinite, and, it must be admitted, somewhat inconclusive. There is, however, fortunately a more tangible theory, propounded by Professor Karl Pearson, and designated by him the theory of "Genetic Selection." His experiments have led him to formulate the following important law. "Fertility is not uniformly distributed among all individuals, but for stable races there is a strong tendency for the character of maximum fertility to become one with the character, which is the type." If, then, the character of fertility *per se* is correlated with some particular, normal, mental, and physical characters, the persons possessing those characters, *plus* the character of fertility, will modify any race in which they live. This implies that the character of fertility is hereditary, and this fact has been fully proved by Professor Pearson and his assistants. "Arguing from the class fertility statistics which have been determined among the population of Copenhagen, it is gathered that the artisan class produce a larger proportion of children than the professional classes, as their gross fertility is greater, and their marriage-rate so much higher. This increased fertility is somewhat counteracted by their greater death-rate; but it would nevertheless appear that the population will ultimately reproduce itself from the artisan classes."[1] Correlation between fertility and any mental and physical characteristic is highly important. But such physical or mental characters are, when associated with fertility, necessarily favourable; that is to say, they cannot be morbid, for progressive fertility excludes morbidity. As quoted above, fertility is limited to certain members of a community; it has been truly said that less than a quarter of one generation produce a half of the next. It follows, therefore, that stable races are largely the product of the typical or most frequently recurring members, and not of all the individual members in proportion to their number. It is through this fact, aided by the law of natural selection, that the uniform type of a race or community is maintained. The negative or converse side of the position is also apparent. The modification of the stability of a population, through any cause, necessarily acts injuriously upon the formation of the type, and predisposes towards variation in unfavourable directions. The most direct adverse modification is therefore undoubtedly infertility, which at once begins to interfere with the building up of any favourable type of population. In this respect, the more rural portions of Ireland are particularly influenced adversely, for not only are the birth and marriage rates diminished, but the product of the typical population is being rapidly deported to other countries.

May it not be possible, also, that the more fertile units in the population emigrate in greater numbers than the less fertile? The decreasing marriage-rate lends some countenance to such a hazardous supposition. Were that the case, two important results would follow:—(1) The *hereditary* character of fertility in certain sections of the population would temporarily be reduced, it might be seriously; and (2) these sections of the population would suffer from the withdrawal of those normal, mental, and physical characters which are necessarily associated with the character of fertility.

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[1] Vernon, "Variations in Animals and Plants," p. 89.

THE SELECTION OF CASES OF PULMONARY TUBERCULOSIS FOR SANATORIUM TREATMENT.[1]

By T. N. KELYNACK, M.D., M.R.C.P., *Assistant Physician to the Mount Vernon Hospital for Consumption and Diseases of the Chest, London.*

PULMONARY tuberculosis is now claimed to be one of the most curable of the chronic infectious diseases, and long prevalent pessimism has given place to an energising optimism. Measures merely aiming at alleviation have been extended into efforts scientifically designed and strenuously maintained for the arrest of the morbid processes on which the disease depends and the restoration of the patient to the ranks of the workers. The hopeless apathy of the past has been replaced by a strong and, according to some, an over sanguine confidence in the beneficial effects of hygienic treatment. Certainly the attention, both of the public and the profession, has been caught by the striking results obtained by the application of the so-called "open-air" method. But no opportunity should be lost of insisting that by such procedure we are adopting no "specific treatment," but relying solely on the employment of those rational and natural measures which careful recognition of clinical facts, and intimate realisation of pathological data, have demonstrated to be scientfically correct. Without casting a shadow of doubt upon the accuracy of our modern conceptions, it is necessary, however, that we should remember that in the use of hygienic methods we are still, to a great extent, in the experimental stage, and no room can be found for irrational dogmatism.

By extravagant advocacy, unreasoning confidence, and the want of proper care in the selection of suitable cases, the best method known to medical science for the effectual treatment of consumption is in danger of being discredited, and already there are signs that, in some quarters, the faith and the support of the public are waning.

It is most essential that all medical men, and especially those who claim to be enthusiasts in hygienic methods, should have clear ideas as to the nature of the pathological processes underlying pulmonary tuberculosis, intimate knowledge regarding the physiological mechanism securing tissue protection, and a wide and varied clinical experience of all the signs and symptoms of the various forms and different stages of this most variable of progressive infective diseases. It may be safely said that, in the case of the majority of sufferers, the hygienic treatment of consumption can only be effectually carried out in a suitably constructed and efficiently conducted sanatorium.

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[1] Substance of a communication to a discussion on "Present Methods of Treating Tuberculosis," before the Hunterian Society of London, Wednesday, April 8, 1903.

Here I may be allowed to say that, while I am fully convinced of the overwhelming advantages of the disciplined and carefully directed life of a sanatorium, I consider it but short-sighted policy to decry or minimise the advantages of treatment by natural measures carried out at home under the supervision of a well-informed and conscientious practitioner.

Not a few of my out-patients, while waiting their turn for admission to a sanatorium, have made considerable progress in the direction of arrest. A fairly considerable experience in the post-mortem room has also fully convinced me that a very large number of cases successfully fight their way back to restoration of health even under circumstances lacking in almost all the essentials of our modern methods. But the admission of such facts, instead of discouraging the adoption of a rigorously conducted hygienic treatment, seems to me to supply some of the strongest arguments in its favour. Almost every case of pulmonary tuberculosis might well be submitted to a rationally conducted treatment in accordance with sanatorium principles; and, as I have already intimated, such management, generally speaking, can be best accomplished in a suitable institution Even acute and progressive cases are often relieved of many of their most troublesome symptoms, and it is by no means uncommon for patients with widespread and advanced disease to leave the sanatorium considerably improved. But at the present time it is impossible to provide for the vast majority of consumptives in this country, such measures as we know are desirable, not only for the alleviation and restoration of the sufferers, but for the protection of the public, and the well-being of the State.

It is estimated that at the present time in England and Wales alone there is an annual mortality of 40,000 persons from consumption; and between the ages of 15 and 25, one-fourth of the total deaths are said to be due to this disease.

It is somewhat difficult to obtain reliable statistics as to the actual accommodation at present available for indigent cases. In this matter I have received much assistance from Mr. W. J. Morton. As far as we can gather, there are in this country probably under 150 *free* beds specially reserved for consumptives in suitably equipped sanatoria. About 665 free beds are available in the special hospitals of London, which, unfortunately, are mostly situated in or near crowded districts, certainly not the best suited for "open-air" treatment. It must be remembered, moreover, that practically all of these "Hospitals for Consumption" are also "Hospitals for Diseases of the Chest," and admit pulmonary affections other than those of tuberculous origin, as well as cardiac cases. For persons who can make a small payment, probably about 400 beds may be counted on. For the well-to-do, however, there seems to be accommodation for upwards of 500 cases, but the expense of residence at the majority of private sanatoria are altogether prohibitive for the vast number of sufferers. It is only fair to add that some few general hospitals and poor-law infirmaries have attempted to provide some slight approximation to open-air methods, but even this can only be extended to a few sufferers. For the poor and struggling workers, the provision of suitable institutions for efficient application of hygienic measures is altogether inadequate.

At the present time, I am told that in connection with our Mount Vernon Hospital, we have 260 cases waiting admission, and this means that some cannot be received for more than five months. Of all cases who apply for admission, only about 60 per cent. are at all suitable. It is therefore manifest that, in the selection of cases, we must be guided by the unfortunate circumstances of the present situation, as well as by the clinical needs of the individual patient. Most of my remarks will therefore apply more particularly to the selection of necessitous cases. It is absolutely incumbent that we should be guided to a very great extent by economic considerations. And according to the discernment and discrimination now shown by medical men, and those responsible for the conduct of our public sanatoria, will depend the spread of an insistent opinion which shall demand and secure adequate State institutions for the cure of the curable and the care of the incurable.

We must carefully distinguish between a "pathological cure" and an "economic arrest." The former, I fear, is for most only available by an impossible expenditure of time and money; but degrees of economic arrest are even now, with all our limited opportunities, not infrequently attained. Where well-marked pulmonary involvement exists, a considerable time is usually necessary to secure absolute obsolescence, but a certain degree of arrest may often be accomplished by a comparatively short residence in a sanatorium, followed by the continuance of suitable conditions such as are obtainable at home, or in some place other than the public sanatorium. It is therefore particularly desirable that it should be our earnest care to detect the first manifestations of disease, and assure for such the earliest possible application of hygienic methods. Unfortunately, in only too many instances, the beds in public sanatoria become occupied by advanced cases, to whom the six weeks or three months' residence permissible bring only a temporary measure of alleviation, while large numbers of incipient cases, which by a short period of treatment and training might be educated in the conduct of a hygienic life, and restored to take a place among the workers of society, are debarred from such opportunities. Many early cases of phthisis now drift into convalescent homes, where, often unrecognised and certainly uncontrolled, the disease frequently makes rapid strides.

In submitting a patient to sanatorium treatment, we seek to secure—(1) removal of the patient from all sources of infection; (2) the establishment of natural processes making for repair, and the development of the highest powers of resistance.

And in the attainment of such purpose, we avail ourselves of such measures as—(1) continuous exposure to fresh air; (2) free access to sunlight; (3) regulated rest; (4) controlled exercise; (5) abundant feeding; (6) obedience to hygienic requirements; and (7) strict medical supervision.

In order to attain the maximum of benefit in the minimum of time, I think, in the selection of cases for admission to sanatoria, we should be guided by the following requirements:—(1) The manifestations of constitutional disturbance should be slight. (2) The local involvement must be limited. (3) The previous history of the patient and the family record should indicate the possession of good powers of natural repair. (4) The mental and moral condition of the patient should be such as will allow of a willing acceptance of the educational and disciplinary advantages offered by sanatorium life; and the social position such as can permit of a continuance of a reasonably conducted hygienic life after discharge.

In endeavouring to place before you certain guiding points, which experience in the selection of consumptives for sanatorium treatment has seemed to indicate as of some service in enabling us to approximate to a compliance with such principles as I have indicated, I would ask you to consider them merely as rough and necessarily tentative suggestions, which can only be allowed directing value when judged in relation to the particular case under consideration.

Concisely summarised, the most *favourable* cases for sanatorium treatment are—

Full-grown, well-built adults, with normal development of chest, good breathers, without antecedent disease, of healthy stock, and trained in such occupation as does not necessarily expose to non-hygienic conditions. A calm, hopeful, orderly, and obedient patient makes the happiest inmate of a sanatorium. The continuance of menstruation is generally considered a good sign.

Many cases in which the onset is acute do well, and oftentimes the lesion becomes limited, and restoration is effected more rapidly than in many cases where the invasion is insidious and the progress slow. Cases in which pleurisy and hæmoptysis are among the initial manifestations, often do remarkably well. Not a few cases in which there is slight laryngeal involvement prove very encouraging. I am inclined to think that some sanatoria make a mistake in not paying greater attention to the local treatment of lesions of the larynx. The chances of recovery, generally speaking, may be said to be in direct proportion to the period at which detection of the morbid condition has been made. The actual extent of the pulmonary lesion is a factor of considerable moment, but too much importance must not be placed on the so-called "stage" of the disease.

Among the *unfavourable* cases are—

Subjects below puberty and of advanced stage. (Children are generally best treated in special sanatoria, and a seaside situation seems peculiarly advantageous.) Low class town dwellers, ill-developed, with misshapen chests and deficient respiratory powers, of reckless habits or undisciplined manner of life, with bad family history, and giving evidence of previous lung enfeeblement, and general deficiency in vigour, form a large section of the applicants for sanatorium relief, and are a peculiarly disappointing class. Subjects, and I think particularly females who break down at or about puberty, often do poorly even under the best hygienic conditions. Excitable, irritable, or morose neurotics are wont to be troublesome under the necessary rigorous discipline of a sanatorium.

Patients in whom tubercle has been implanted on an old chronic, bronchitic, and emphysematous base, generally prove unsatisfactory; indeed, cases in which signs of bronchial involvement persist, I am always inclined to regard as most unfavourable for such open-air methods as are generally available in this country.

Where there is widespread cavitation, the benefit gained is usually but briefly retained. Extensive disease of the lungs is distinctly unfavourable. Continuous high temperature, profuse sweating, uncontrollable cough, marked dyspnœa, tendency to cyanosis, intermittent attacks of pleurisy, persistent anorexia, dyspepsia, troublesome diarrhœa, insomnia, nervous irritability with despondency or melancholia, are usually evidences which go far to render patients unsatisfactory subjects from the standpoint of the public sanatorium.

I am accustomed to consider a persistently rapid, irregular, low tension pulse a bad sign.

Phthisical patients, the subjects of alcoholism, diabetes, cardiac lesions, Bright's disease, or other serious organic affection, generally gain no permanent benefit by residence at a sanatorium.

A considerable number of persons who seek relief have been the subjects of syphilis, but unless there are distinctive syphilitic lesions present, there is no reason why such should be excluded.

Where there is profound anæmia, considerable toxæmia, general debility, extensive laryngeal mischief, fistula *in ano*, or evidence of a more generalised tuberculosis, the outlook is usually most serious.

Generally speaking, examination of the sputum, although, of course, of great diagnostic value, affords but little assistance in the actual selection of cases.

Considering the difficulties of the present situation, in affording suitable accommodation for desirable cases, I am inclined to think that it is expedient and, even considering the patients themselves, judicious to exclude at once from our free public sanatoria all pauper aliens and such indigent cases as will probably be compelled speedily to seek asylum in the workhouse infirmaries.

But a word of warning is very necessary. While we attempt to discriminate between those cases which are likely to react favourably to a properly applied sanatorium treatment, and those which will obtain no permanent benefit from hygienic methods, it is essential that we should not be altogether led by mere generalisations. Oftentimes what appears to be the most favourable case, fails to profit; while what seems to be the most unfavourable, disappoints our fears. In fact, every case should be studied individually, and considered on its own merits.

It is customary for an applicant seeking admission to a sanatorium to present a report containing more or less definite clinical data. It would be well if the authorities of such institutions could realise that in the majority of instances these certificates, as generally filled up, are of but little value.

I think it would also be wise if medical men responsible for the conduct of public institutions dealing with consumptives, boldly declared that in very many instances it is impossible to state, with anything like certainty, what the course of a case may be by merely one examination in an out-patient department, often after the patient has been fatigued by a long journey, wearied by much waiting, excited by the unaccustomed surroundings, and frequently depressed by the presence of strangers and other circumstances.

It should be remembered also that, in not a few cases, the most unfavourable symptoms, such as persistent cough, profuse expectoration, night sweats, high temperature, anorexia, dyspepsia, diarrhœa, and the like, quickly yield to hygienic measures.

In dealing with consumptives, I am convinced that we should aim for some such arrangement as we are endeavouring to provide in the case of the Mount Vernon Hospital:—

1. *A central out-patient department* for the observation and selection of new patients, the treatment of such cases as cannot obtain admission to a suitable institution, and the periodical examination of those who, having undergone sanatorium treatment, have returned to work.

2. *A hospital*, conducted on strictly hygienic lines, in close touch with city life, where acute cases may be located, and where doubtful cases may be watched and thoroughly investigated.

3. *A country sanatorium*, where carefully selected cases may, under strict medical control and the best possible hygienic conditions, be directed to a practical recovery.

But the establishment of sanatoria is not the beginning and end of the matter. It is still necessary to wage incessant combat with the many influences making for the propagation of tuberculosis.

At the present time there is also urgent need for the establishment of suitable homes for advanced cases, and the founding of colonies for those permanently crippled. And now, when all sorts and conditions of sanatoria are rapidly springing into being, almost as much judgment is necessary in the selection of the sanatorium for the patient, as in the choice of a suitable patient for the sanatorium.

I had hoped to have dealt with the classification of cases in sanatoria, but I have already overstepped the limits of time. Let me say, however, that on pathological as well as clinical grounds, a grouping of cases is most desirable.

By adopting a grading of patients at Mount Vernon, we introduce a very valuable factor, which can be of much personal encouragement, and I might almost say emulation, and which, moreover, is of assistance in maintaining a good *esprit* among our inmates. But the reliability and effectiveness of our principles of selection, and the convenience and advantage of every method of grouping, must, if we would retain the confidence of the public in the reasonableness of hygienic methods, be rigorously tested by their service to the individual case; and in this matter, at least, wise discretion and a scientifically directed discrimination can find ways which shall be helpful to "one and all."

PRIMARY ACUTE MILIARY TUBERCULOSIS OF THE CONJUNCTIVA.

By GEORGE A. BERRY, M.B., F.R.C.S.Ed., *Lecturer on Eye Diseases, Edinburgh University; Ophthalmic Surgeon to the Royal Infirmary, Edinburgh.*

CASES of tuberculosis of the conjunctiva are of very rare occurrence. Their frequency has been variously estimated by different observers at from 1 in 30,000 to 1 in 4,000 of the cases attending an eye hospital. No doubt this difference, though to some extent it might be accounted for by local conditions, is mainly due to the fact that the symptoms are often not very characteristic. Consequently their nature may readily be overlooked. In some respects the statistics of a hospital department such as that of the Edinburgh Royal Infirmary, to which there is no dispensary, differ materially from those of a regular eye hospital or dispensary. I have, for instance, in connection with various eye diseases, found great differences in the relative number of cases occurring in my hospital practice, which includes a large proportion of fairly well-to-do people from the provinces and the north of England, as compared with the poorer classes who attend the eye dispensary. The actual proportion of cases of tuberculosis of the conjunctiva might, for a similar reason, alone be differently estimated by different ophthalmic surgeons. But the proportionate occurrence of the affection is of little consequence. The interesting fact remains that it is a decidedly rare one. This appears to me to be rather remarkable, in view of the frequency of injuries to the conjunctiva, as well as of conjunctival inflammations which are known to result from the action of various microbes. Considering, too, the hygienic conditions under which many of the poorer classes live, and the widespread existence of tubercle bacilli, one might expect to meet more frequently with tubercle in this situation. Possibly the conjunctiva is specially tolerant of the tubercle bacillus, or the tears and other secretions in some way remove them more effectually than is the case with other micro-organisms.

The following case shows, however, that when once a tuberculous inoculation of the conjunctiva has been effected, the reaction which follows may be both rapid and characteristic. I had in fact no hesitation, on first inspection, in pronouncing the case to be tubercle, so different were the appearances from any other conjunctival new growth. This diagnosis, too, was, as will be seen, fully confirmed by the further clinical features of the case, by the microscopic examination of the tissue removed, by the inoculation of a rabbit from it, and by the presence in it of tubercle bacilli.

CASE.—Isabella R., æt. 10, sent by Dr. Scott, Musselburgh, was admitted to Ward 2, Royal Infirmary, on 23rd January 1903. She complained of a swelling and redness of the eye, which had existed for three weeks, getting gradually worse.

History.—About three weeks previous to admission, she got a small piece of ash off a match into the right eye. This burnt a small hole. Instead of healing, the wound gradually spread, and the eye became red all over. There was never any pain, lacrymation, or photophobia. The eyelids did not stick together in the morning. The sight was in no way interfered with. Previous to this slight accident the eye had been perfectly healthy. The child herself was in good health, was not kept in the house, and played outside as usual. About two weeks after the accident her mother noticed a small "lump" at the side of the cheek on the right side. This was painful, and after hot applications had been made, and continued for some time, it came to a head. Dr. Scott then incised it and removed some cheesy pus. A few days later the mother also noticed a lump under the chin, but this remained hard. She also used a boracic acid wash for the eye. As the condition did not improve, she was sent to the Royal Infirmary under my care.

Previous illness.—Whooping-cough seven, and measles four years ago; otherwise she has been a perfectly healthy child.

Family history.—Mother and father both alive and well. There are six older and two younger sisters, and one brother younger than patient. Three sisters are dead, one from whooping-cough, æt. 4; one from croup, æt. 2 years; and one from inflammation of the stomach" (the eldest of the family), æt. 8 years. Patient has a usin on father's side, a boy, who has been operated on for "glands in e neck;" also a cousin on the mother's side who died of consumption, t. 14 years.

Surroundings.—Patient has a good home in the country, and has ways had plenty to eat. The house is a six-roomed one, and the other states that the children always sleep with their windows open at ight.

State on admission.—Patient is rather pale, though not delicate oking. The face is full, and the body generally well nourished. On e right side there is an imperfectly healed scar over the right parotid, here the pre-auricular gland has been incised. Pulse 90, full, strong, nd regular. Temperature 98°·6.

Examination of right eye.—There is slight inflammation of the onjunctival surface of both lids, but no follicular enlargement. The ear sac is healthy. The ocular conjunctiva is congested and swollen, specially above and below the cornea, and least so at the inner and uter angles. In the swollen area there are a number of greyish white nd yellowish patches. Some of these are small and discrete; others have evidently coalesced, and are breaking down (see Figs. 1 and 2). The ornea is quite clear, the pupil reacts both to light and convergence. The lens is clear, the tension normal, and the visual acuity, $\frac{6}{6}$.

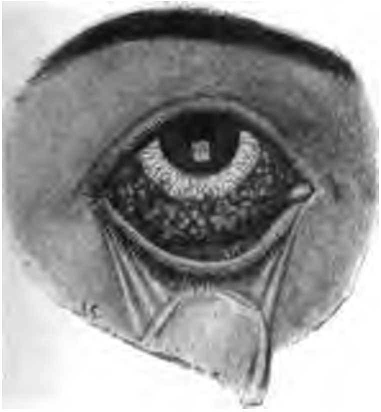

FIG. 1.

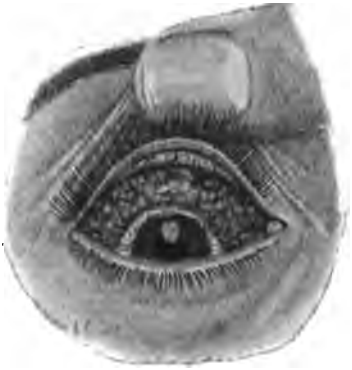

FIG. 2.

Alimentary system.—There are no subjective sensations connected with the taking of food—no pain, no eructation. On admission there was nausea and vomiting, which was subsequently found to be caused by patient having eaten unripe fruit. The *stomach* is of normal size; no splashing can be elicited. The *teeth* are good. The *tongue* is moist, not unduly red; there is a slight furring of the posterior part. The *bowels* are quite regular; there has never been any diarrhœa. On palpation of the relaxed abdominal wall no enlarged gland can be made out. The *liver* is of normal size.

Circulatory system.—There are no subjective symptoms, no palpitation or dyspnœa, etc. The size of the *heart* is normal, the apex beat in the fourth interspace 1 in. internal to the nipple line. The heart sounds are normal in every area. The *pulse* is 90, regular, and of good tension.

Respiratory system.—There is no cough, or difficulty of breathing; no pain. Both in front and behind the lungs expand equally on deep inspiration. There is no increase in the vocal fremitus at any point. The percussion note is resonant all over. The breath sounds present absolutely no abnormality. The breathing is costo-abdominal in character and regular, and the rate 22 per minute.

Nervous system.—The patient is timid and rather nervous. There are no headaches.

Urinary system.—There is no pain, difficulty, or excessive frequency in connection with micturition. The *urine* averages 40 oz., sp. gr. 10·20, the reaction acid; colour, pale amber; no deposits, and no abnormal constituents.

Hœmopoietic system.—The spleen is normal. There is no leucocytosis.

On 28th January I removed, under chloroform, the whole of the tumefied portion of conjunctiva, and then covered in the denuded surface as completely as possible by undermining the remaining conjunctiva and stitching it forward towards the cornea above and below. Healing took place normally.

On the 7th of February, however, *i.e.* ten days after operation, the lids became somewhat œdematous and reddened. Two nodular masses were then found to have appeared to the outer side of the outer canthus. These small masses were hard and freely movable. Three days later they were evidently breaking down, and were much softer. The superficial submaxillary and submental glands, which had been previously only slightly enlarged, became at the same time much larger and softer. The next day the patient was transferred to Ward 15, under the care of Mr. Cotterill.

During her stay in Ward 2 she was given syrup of the iodide of iron and cod-liver oil, her appetite was excellent, and her weight increased by 3 lb. in the fortnight. There was never any rise of temperature at any time of the day.

On 17th February, Mr. Cotterill dissected out the superficial submaxillary and submental glands. Both showed marked softening and caseation. At the same time the sinus from the pre-auricular gland was pared, scraped, and swabbed with pure carbolic acid. A large amount of tuberculous débris was got from this sinus. These various wounds healed satisfactorily, the pre-auricular sinus only being not quite healed on the patient's readmission to Ward 2 on 27th February. On 28th February I opened the subcutaneous swelling in the facial lymphatics to the outer side of the eye, and freely scraped away with the Volkmann's spoon a quantity of pus and débris of a similar character to that already removed. This healed *per primam*, and the patient was discharged on 4th March.

Microscopical examination.—The excised mass was given to Dr. Beattie straight from the eye. One portion of it was used for making sections. With another portion a rabbit was inoculated. The hardened and stained sections showed very definite tuberculous nodules with giant and epithelioid cells. No bacilli were detected in the sections. The pus obtained from the nodules stained by the Ziel-Nielsen method showed only a few undoubted tubercle bacilli.

The rabbit inoculated was killed a month later. The mesenteric glands were found to be full of caseating tuberculous pus. There was a definite nodule in the peritoneum, and some also in the liver and spleen.

Like most cases of conjunctival tuberculosis which have been described, the above seems undoubtedly to have been *primary.*

In 1891, Sattler proposed a classification of conjunctival tuberculosis into four groups, which, however, he admitted were not invariably distinguishable one from the other, owing to the existence of intermediate types. Cases which have since been published make it probable that other forms may be met with than those which can properly be said to belong to any of Sattler's groups. These appear, however, to represent sufficiently well the usual types which occur.

The case here described belongs to Sattler's first group, in which the disease most closely resembles, both clinically and anatomically, the usual form in which tubercle affects the mucous membrane. The group is characterised by the appearance in the ocular or palpebral conjunctiva of miliary nodules, which have a tendency to break down and coalesce, cause comparatively little surrounding inflammatory reaction, and are uncomplicated by any coxcomb-like or papillary excrescences. In this group there is nearly always swelling of the pre-auricular gland. The microscopical examination shows typical miliary tubercle imbedded in densely vascularised granulation tissue. The floors of the ulcers show marked caseation, and tubercle bacilli are usually fairly numerous.

In the case just described the extent of the area of conjunctiva involved, as well as the massiveness of the subjacent hyperplasia, was much greater than anything I have seen described elsewhere. This has probably been due to the manner in which inoculation had evidently taken place, namely, into a fresh wound in the conjunctiva. The more common occurrence seems to be for phlyctenular or other ulcerated surfaces to become invaded by the tubercle bacillus. The tubercular development appears then to be slower, and is besides more likely to come under observation at an earlier stage.

The extent to which, and the rapidity with which, the superficial lymphatic system connected with the eye became involved, showed also an unusual virulence.

Of all the different ways in which the tuberculous nature of conjunctival disease can be recognised, there was, as it appears to me, nothing more characteristic in this case than that presented by its clinical course. The microscopical appearances alone can, in any particular case, at most afford a strong suspicion of tubercle, as there are other conditions which give rise to appearances barely if at all distinguishable from the true tuberculous nodule. I need only mention here the histological changes which may form round certain foreign bodies, and those which may be met with in sarcoma and syphiloma. Even inoculation experiments are not free from the possibility of proving fallacious, while it is by no means always easy to find tubercle bacilli in undoubtedly tuberculous tissue changes elsewhere.

THE NERVOUS AFFECTIONS OF THE HEART.[1]

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SECOND SERIES.

LECTURE II.—DISTURBANCES OF RHYTHM.

IN these lectures, it is indeed difficult to avoid, to some extent, a certain amount of overlapping. From the very nature of the subject, it is impossible but that this should, to some degree, take place. The disturbances of the rhythm of the heart, which form the subject of this, have in part been touched upon in the previous lecture, and they will have to be referred to once more in my concluding remarks. It is necessary for me to mention that in regard to some of the disturbances of rhythm it is a misnomer to use the term "nervous affection." As will emerge in the sequel, many forms of altered rhythm are, according to our present lights, produced entirely by changes in the myocardium. As they have, however, to be compared with those modifications of rhythm undoubtedly produced by nervous causes, they must be considered in these lectures.

Starting again on the basis of the automatism of the heart—with the fact that its pulsation is due to its own inherent properties, we have, in the first place, to consider very briefly how the contraction passes from that part of the heart which first beats to the rest of the organ. It used, for a long time, to be a matter of considerable doubt, to be very difficult indeed to understand, how a wave of contraction could pass from the auricular portion of the heart to the ventricular, when, so far as was known, there was no regular muscular continuity between these different parts of the heart. But in quite recent years the researches of His[2] have shown that there is a band of muscular fibres in every mammalian heart, which extends from the back of the right auricle to the region of the attachment of the aortic cusp of the

[1] "The Morison Lectures," delivered before the Royal College of Physicians of Edinburgh, March 2, 4, and 6, 1903.

[2] *Arb. a. d. med. Klin. zu Leipzig*, 1893, S. 23.

mitral valve. There is, accordingly, by this means an absolute continuity of muscular tissue through which a wave of contraction can pass from the auricular to the ventricular part. We have further to remember that the nervous connections, although they have nothing to do with the actual causation of the movements of the heart, may nevertheless exercise considerable influence in conveying the wave of contraction across the organ. We have in these two ways, then, a possibility of the propagation of a wave of contraction from that part of the heart which sets the rate and rhythm at the base to the ventricular part of the organ. Changes in those structures, as will be pointed out later, may quite well interfere with the rhythm of the heart and lead to various disturbances. Not only may the action of the heart be interfered with by those external impulses that have already been referred to in the previous lecture, but in consequence of some alteration in the structure, or even in the metabolism, of the heart itself there may quite readily be disturbances of rhythm. And when we further consider, in addition to such factors as those leading to irregularity, that there may also be differences as regards the stimulus to the heart which is undeniably produced by its fluctuating contents—the varying amount and nature of the blood which its chambers contain—we shall acknowledge with what ease irregularity may be produced.

Irregularity of the heart has undoubtedly been somewhat overestimated in its importance. There can be no question that there are many hearts intrinsically irregular from the cradle to the grave, even in cases when that period covers a very lengthy interval of time. My meaning is that there are many individuals —we meet them indeed daily—who have irregular pulses, and who are not a whit the worse for them. Owing to this common exaggeration of the significance of irregularity, numerous men and women pass the greater part of their lives quite unnecessarily "subject unto bondage." It is absolutely certain that the seriousness of irregularity has in general been greatly exaggerated, and we must recognise the justice of the views on this subject which have been expressed lately by Mackenzie.[1] Let me refer in this connection to the fact that many mammals who are known to be relatively long-lived, and who are possessed of a large amount of muscular energy, show remarkable irregularity of pulse throughout their whole lives. That is particularly the case with the dog, and it is especially the case with those breeds which we esteem on account of their fleetness and endurance. It is essentially the case with the staghound, the greyhound, and the collie, all of whose hearts we can make out to be intrinsically irregular.

Now it must be premised very briefly that the normal stimulus to the contraction, which is inherent in the heart itself, is subject, in the first place, to variations in the contents of the auricular reservoirs; and, in the second place, it is subject to interferences caused by the nervous connections. Changes in either of these classes of factors may lead to various types of irregularity. To this subject we must return later. It will be easier to analyse the different causes of disturbed rhythm, after we have considered in what the various types of alteration consist.

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[1] "The Study of the Pulse," 1902, p. 106.

We must then, in the first place, briefly consider the varieties of irregularity of rhythm as they may be studied by means of tracings taken from the heart or artery. It is far from my intention to weary you with a long series of cardiac or arterial curves; only a few perfectly typical cardiograms and sphygmograms will be brought before you. There are in the accompanying tracings two common examples of pulse irregularity. In the one case, the irregularity is due to the presence of an early systole—a premature ineffectual systole—most likely caused by structural changes in the heart, or alteration in the amount of blood in it; in the other, it is produced by a lengthening of the period of diastole, which is probably in most cases brought about by inhibitory interference—direct or reflex. In the previous lecture good reasons were adduced for accepting the belief that in the former type of irregularity the heart has been stimulated to contraction too early, as shown by the observations of Mackenzie,[1] Wenckebach,[2] and Cushny[3]; the contraction, however, proving ineffectual, has barely sufficed to open the aortic cusps and allow a wave to be sent into the aorta.

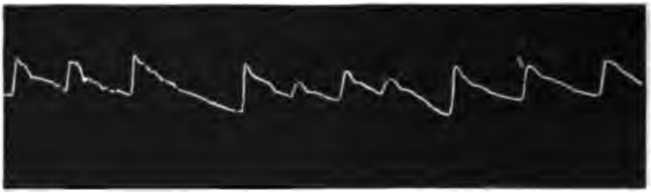

FIG. 1.—Irregularity produced by the occurrence of premature systoles.

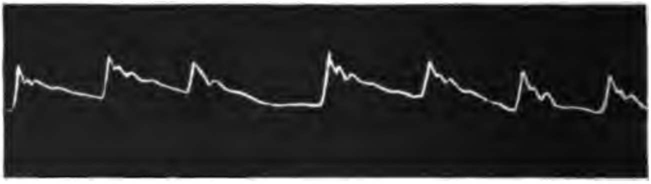

FIG. 2.—Irregularity caused by varying length of diastole.

An observation of Marey[4] illustrates this fact very distinctly, as may be seen in the tracing, Fig. 3. Four cycles of cardiac action are to be seen in the curve, and it will be noticed that they are grouped in pairs, each pair consisting of a larger and a smaller elevation. The dotted line shows the height to which the curve of contraction must rise before the aortic cusps open. It therefore follows that the weaker systole cannot produce any pulsation in the arteries. This is an example of a premature systole without arterial pulse. If the early systole were somewhat more powerful, it would give an arterial pulse at once bigeminal and alternate.

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[1] *Loc. cit.* [2] *Loc. cit.* [3] *Loc. cit.*
[4] "La circulation du Sang," 1881, p. 122.

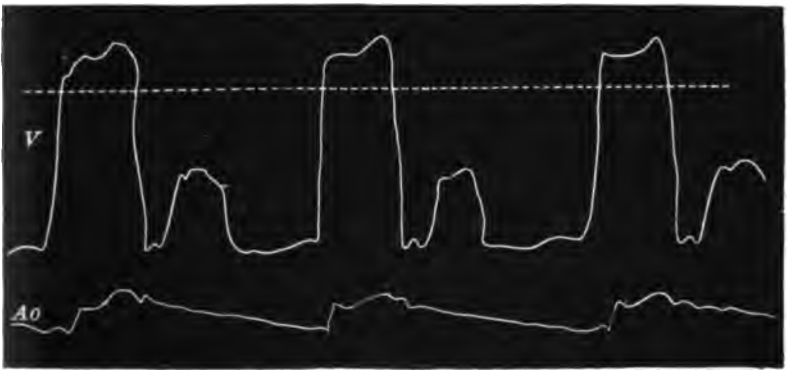

Fig. 3.—Tracing from left ventricle *V*, and aorta *Ao*; the dotted line shows the height of pulsations necessary to open the aortic cusps.

There are two main forms of simple irregularity—an irregularity which is arrhythmic, and one which is rhythmic. In the tracing, Fig. 4, after a few beats there occurs a premature systole

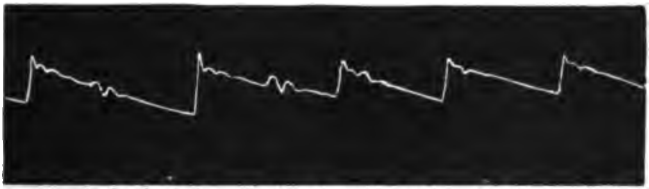

Fig. 4.—Arrhythmic irregularity—irregular pulse caused by arrhythmic premature systoles; mitral disease.

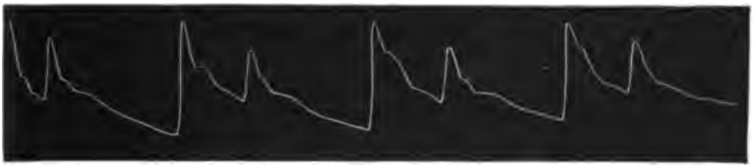

Fig. 5.—Rhythmic irregularity—bigeminal pulse caused by rhythmic premature systoles; aortic disease.

followed by a longish pause. There is, on the other hand, in Fig. 5, a perfectly rhythmic form of irregularity. The heart is beating in pairs of pulsations, but the second pulsation in every group of two is a small one, and it is succeeded by a longer pause. In such a form of irregularity the second of the two grouped beats is caused by a premature systole occurring before its proper time, and therefore somewhat ineffective. When we consider such an absolutely arrhythmic kind of irregularity, as is shown in Fig. 6, an irregularity which does not only consist in absolute arrhythmia of the pulsation, but at the same time manifests a great diversity in the size of each wave—that is to say, a great variation in the amount of force which has produced the pulsation—we recognise that in such a tracing there is a great contrast to what takes place in one of the periodic forms of irregularity; in fact, such a curve gives an approach to delirium cordis.

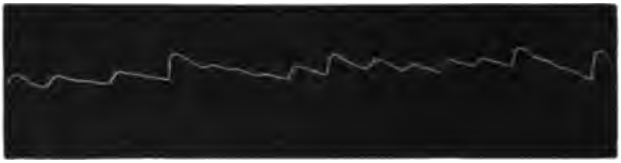

FIG. 6.—Arrhythmic irregularity—absolutely irregular and unequal pulse; mitral disease.

It is a matter of interest to notice that there are several degrees of the periodic or rhythmic forms of irregularity, according to the number of intermissions. There are the pulsus bigeminus, the pulsus trigeminus, the pulsus quadrigeminus, the pulsus quinquegeminus, and even further forms, according to the number of beats in each group. The essential point in these types is that the last pulsation of each group is a premature systole, the occurrence of which serves to impose on the original rhythm a larger periodicity. In such rhythmic irregularity there is an excellent illustration of the idea so tersely expressed by Herbert Spencer, in his interesting remarks on the rhythm of motion: "Primary rhythms of the organic actions are compounded with secondary ones of longer duration."[1]

In the forms of irregularity of this type, whether rhythmic or arrhythmic, the irregularities are usually due to the early and ineffective contraction of the heart, which has obviously been stimulated in its auricular portion at too early a period. On the other hand, when the irregularity is due to a varying length of the diastole—the usual form of irregularity found in early life—the cause is commonly to be sought in nervous influences. In the pulse disturbances which are found before middle life, this is the most frequent cause which brings about the irregularity. It is not due to any valvular affection, it is not due to any change in the muscular walls of the heart, it is not due to any form of degeneration; it is due to irregular impulses passing down the accessory fibres in the vagus nerve, thus inhibiting the systole, and causing it to be later in its development. In this type of irregularity it is indeed very rare to find any periodicity—there is almost invariably an absolute arrhythmia.

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[1] "First Principles," 4th edition, p. 261.

The esoteric causes of the various interferences with the ordinary rhythm fall into two well-defined groups—intrinsic, or cardiac; and extrinsic, or nervous. No doubt, as we shall see reason to believe, the two groups sometimes overlap, *i.e.* both are operative in the same individual. A further caution must be expressed. When we trace back the factors to their absolute source, we find that many of them are really the secondary results of more remote causes. For example, as we shall see, some forms of cardiac disturbance are consecutive to arterial changes. Among the intrinsic or cardiac causes are toxic agencies, such as the influence of certain of the toxines which arise in the course of the infections. Of these we have examples more particularly in such fevers as pneumonia, typhus, influenza, and diphtheria. These are far from exhausting the category of such causes, seeing that every acute febrile disturbance may give rise to irregularity of the pulse. One of the most common causes stands next in the list; to it the well-worn term gout may still be applied, although we do not know exactly what we mean when we use it; we may employ it, nevertheless, in the sense of some poisoning of the system produced by faulty chemical processes — an auto-intoxication — of which it is probable that uric acid in excess is only one subsidiary part. Every one knows how common it is to find in the gouty individual a troublesome form of irregularity of the heart. In another category stand three chemical agents—alcohol, tea, and tobacco. These different poisonous substances—to be correct we must allow them to be so—cause varying kinds of irregularity, and produce them in different ways. It is probable that in the case of the toxines, as well as in whatever is the *materies morbi* in gout, there are poisonous results on the nervous system governing the heart, together with toxic effects on the heart muscle itself. In the case of alcohol this is probably also true. There can be no doubt that in an early stage of alcoholic intoxication the vagus is thrown out of action, as the result of which the heart at once races; we must, however, remember that there is also another factor, since alcohol is one of the most potent agents leading to destructive changes in the structure of the heart. Here again, therefore, we have two distinct factors at work. In the case of tea it is a somewhat different causation that gives rise to the irregularity. Although very loth, indeed, to say anything that would curb the use, physiologically at any rate, of that cheering beverage, truth compels me to admit that tea has a great tendency to upset the cardiac rhythm. It does not do so because it produces changes in blood pressure; my convictions are decided on this point, and are based upon a series of unpublished experiments performed by me upon the heart many years ago with theine and caffeine. Tea undeniably gives rise to irregularity through its interference with the nervous mechanism pure and simple. It also produces a tendency to distention of the abdominal viscera; it causes at the same time a weakness and irritability of inhibitory impulses, and these two factors lead to the irregularity to which tea gives rise.[1] As regards tobacco, we know from the researches of Langley,[2] that it has a great tendency to interfere with the synapse between the pre-ganglionic fibre and the nerve-cell. It is obvious that in this process of interfering with the connection between the central and peripheral vagus neurons there may be a great amount of disturbance, leading to alteration of the rhythm. Further, as tobacco has the effect of raising the blood pressure, we realise quite clearly how it must necessarily, when abused, lead to disturbance. We shall see in the next lecture that it is one of the most fertile sources of palpitation; meantime you will perhaps allow me to mention that different kinds of tobacco produce very different effects upon the human heart. Certain forms of tobacco are almost innocuous, others are pestilential in the highest degree; and some of the tobaccos that have obtained a very great vogue on account of the literary romance thrown around them, are perhaps the most deleterious of the whole series. There can be no doubt of the fact that of all forms of tobacco the least hurtful is the cigar. The next in point of harmful effect is the pipe, while the cigarette is to be put highest of all in the range of evil possibilities; used as it so often is, by inhalation, it is infinitely worse than any other form of smoking. Of other uses of tobacco but little is known to me in any practical manner except as a mere incident.

Enfeebled states of the heart, in the next place, require our notice. Long ago Stokes[3] formulated the axiom "with respect to irregularity, experience shows that this condition is more intimately connected with lesion of the muscles than of the valves of the heart." Such feebleness of the heart may be produced by over-strain and allied conditions. Any long-continued stress leads to strain, strain leads to dilatation, dilatation leads to malnutrition, and malnutrition leads directly to irregular action; here it is the heart muscle that is at fault. It seems to me that this is perhaps the best time to try to explain the great irregularity in cases of mitral disease. In mitral disease, when there is much interference with the left auricle, it is stimulated too soon by the presence of the excess of blood which it contains. This is the first link in the chain. In addition to this, the nutrition of the auricle suffers, leading to structural changes. When the right cavities undergo consecutive dilatation and subsequent organic alterations, the connecting link, the band of muscle fibre which passes from the right auricle to the ventricles, sinks into a state of malnutrition on this account; the combination, therefore, of the weakness of this connecting link, and of the too early stimulus to contraction, leads gradually to the irregularity.

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[1] The observations upon this subject by Percival (*Dub. Hosp. Rep.*, 1817, vol. i. p. 219) are most interesting, and echoed, or rather reinforced, by Stokes (*Op. cit.*, p. 517). Percival states (*Op. cit.*, p. 224) that sometimes tea restores the rhythm of an irregular heart.

[2] *Journ. Physiol.*, Cambridge and London, 1890, p. 277.

[3] *Op. cit.*, p. 175.

Certain inflammatory affections naturally fall to be considered at this stage. In all forms of pericarditis, but more especially in those which follow acute general diseases, changes of rhythm are common, and are probably due partly to weakening of the muscular walls, and partly to irritation of the nervous connections. It need scarcely be added that when any considerable effusion occurs there is great interference with the action of the auricles—a fact experimentally investigated by Cohnheim[1] and Starling[2]—and much resulting irregularity. Pericardial adhesions, further, act in a quite analogous manner. Endocarditis, for the most part through its attendant muscular weakness, also produces similar effects; and myocarditis, whether primary or secondary to pericardial and endocardial changes, is even more potent. Further, of cardiac causes there are the chronic lesions, interstitial myocarditis and fatty degeneration. In such conditions, on account of the interference with the heart, and its consequent weakness, on account, also, probably of the irritation to which the nervous mechanism in the heart is subjected, there comes to be a high degree of irregularity. In many such cases the starting-point is undoubtedly a change in the coronary arteries. Lastly, the heart may fail, as the result of long-continued resistance to the outflow, when there are chronic arterial changes.

The next category does not require any lengthy exposition, reflex and direct nervous influences easily explain themselves through irritation of the vagus nerve. Reflex nervous influences may arise from disturbances of viscera in different parts of the body; direct nervous influences may be purely neurotic or functional in their origin, they may be produced by some irritation of the vago-accessory nerve itself, by interference with the cord or brain, or, lastly, by purely psychical influences as in emotional disturbances. The explanation of the changes of rhythm so produced is to be sought in the fact that there are alterations in the stimuli, modifications in the responses to the inhibitory changes, and possibly accelerator disturbances. As to this latter there is always considerable dubiety. We know little of the accelerator mechanism of the heart when we contrast it with the inhibitory, and in almost every instance where there is alteration, whether of rate or rhythm, it is an inhibitory, not an augmentor disturbance, that causes the change. Here let me mention as an illustration of this statement, an interesting fact brought out by MacWilliam[1] as regards the great difference that exists in two animals, the rabbit and the hare. The former has normally a very frequent, the latter a comparatively infrequent pulse. In the rabbit there is very little disturbance when the vagus nerve is severed, in the hare there is an enormous difference; and it seems probable that the explanation which MacWilliam gives—it is an interesting explanation—is probably quite correct. He shows that the rabbit has no need of staying power or tremendous speed, except over short distances; it does not migrate very far from its home, its burrow is near as a place of refuge; whereas the hare eludes its enemies by speed and endurance, as well as by doubling and twisting. He found from experiments on these two animals, that while there is only a small increase in the rate of pulsation on muscular exertion or on severing the vagus in the neck of the rabbit, there is under the same conditions a very great acceleration in the hare—indeed, it is a common experience to find that the rate goes up to more than 200 beats per minute; irregularity also in the hare is, according to MacWilliam, extremely easy of production.

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[1] "Lectures on General Pathology," *New Syd. Soc.*, 188), sect. i. pp. 21, 31, and 73.

[2] *Lancet*, London, 1897, vol. i. pp. 569, 652, and 723.

The clinical features of irregularity chiefly consist in the physical evidence of our senses in examining the heart-beat and the pulse-wave; but it is to be remembered that, along with those various features, there may be a great many attendant phenomena—the patient may suffer from uneasiness or even pain; he may be conscious of weight or heaviness; he may feel tightness or constriction about the chest; instead of these sensations, he may be painfully conscious of the fact that there is a good deal of throbbing and irregularity, with an uncomfortable sensation of pausing or stopping. Some of these phenomena must be taken up in the concluding lecture along with palpitation, and to them it is not now necessary to refer further. Along with such disturbances, there are many kinds of nervous accompaniments which we may also postpone until we deal with the conclusion of our subject.

There are two special forms of irregularity which have to be referred to. The first of these consists in the condition originally observed by Williams,[2] but only generally known since the observations of Griesinger[3] and Kussmaul[4]—the pulsus paradoxus. Under ordinary circumstances it is found that with inspiration the pulse becomes stronger and more frequent. The paradoxical pulse is exactly the counterpart of that. In the pulsus paradoxus with inspiration the pulse loses its force and becomes a little less frequent than during expiration. With expiration the pulse again becomes stronger, and somewhat more frequent when it is carefully measured out. The pulsus paradoxus will be referred to in a few minutes at greater length, but let me mention the way in which it is most commonly seen—when the pericardial and epicardial membranes are fused together, so that there is obliteration of the sac, along with adhesions round the origin of the great vessels, whereby during inspiration less blood is allowed to pass out into those great vessels, the paradoxical pulse is to be found. It is necessary to grant that this paradoxical pulse is not always confined to that rare condition. In my own experience it has occurred in ordinary adherent pericardium. It also occurs in ordinary pericarditis; in short, we may say that it may occur whenever anything lessens the strength of the contraction of the heart, so that during inspiration it is somewhat interfered with in its expulsion of blood into the great vessels.[1] That seems to me to be the explanation of this phenomenon. It is said to occur in perfect health. No example of this has yet come before me. Of this pulsus paradoxus the accompanying tracings (Figs. 7 and 8) furnish excellent illustrations. They are the first two tracings of the condition that have ever been published, giving both respiratory and arterial curves,[2] and for them my house physicians, Dr. Bullmore and Dr. Conder, and myself owe our thanks to Dr. Oliphant Nicholson, who is such an expert on the subject of graphic records. In the line of the respiration the rise represents

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[1] *Proc. Roy. Soc. London*, 1893, p. 476.

[2] *London Journal of Medicine*, 1850, vol. ii. p. 464.

[3] Unpublished lecture referred to by Widenmann, "Beitrag zur Diagnose der Mediastinitis," Tübingen, 1856, S. 1.

[4] *Berl. klin. Wchnschr.*, 1873, S. 433, 445, u. 461.

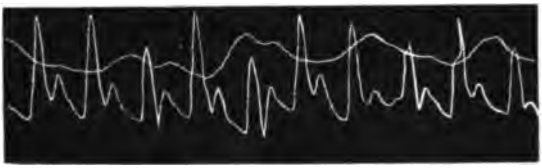

FIG. 7.—Paradoxical pulse from a case of indurative mediastinal pericarditis.

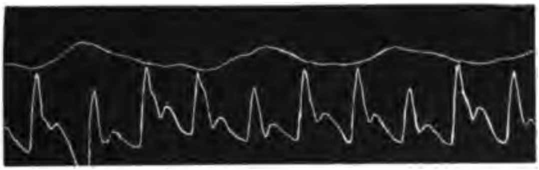

FIG. 8.—Paradoxical pulse from a case of indurative mediastinal pericarditis.

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[1] For a summary of views on the pulsus paradoxus, cf. Harris, "Indurative Mediastino-Pericarditis," 1895, p. 61; and *Lancet*, London, 1899, vol. i. p. 1053.

[2] *Practitioner*, London, 1903, p. 212.

the inspiration, and the fall the expiration. The tracings were obtained from a boy in whose case the diagnosis was mediastinal pericarditis. More recently another series of tracings has been obtained by my house physicians, Dr. Conder and Mr. Henderson Smith, from a male patient, æt. 28, suffering from tuberculous pleurisy and pulmonary consolidation, probably with pericardial complications. In the curves so obtained (Figs. 9 and 10) it will be seen that with inspiration the radial pulse almost disappears. In these two last tracings it is a matter of interest to note that the pulse is hyperdicrotic.

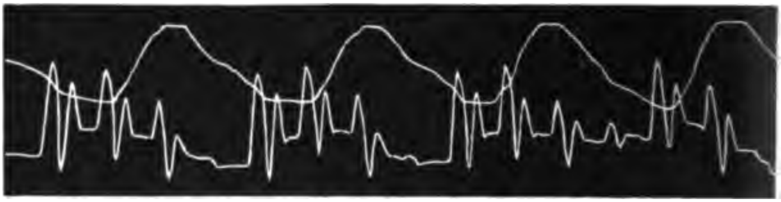

FIG. 9.—Paradoxical pulse from a case of pleurisy and pulmonary consolidation.

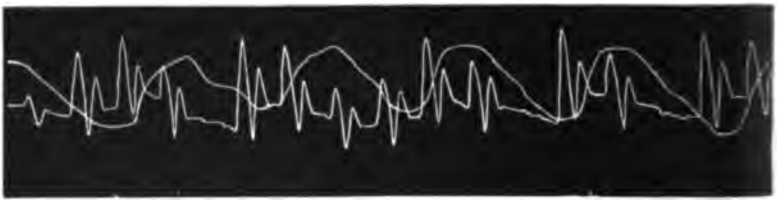

FIG. 10.—Paradoxical pulse from a case of pleurisy and pulmonary consolidation.

The second special type of irregularity must now be considered; it is what is called hemisystole. By hemisystole is meant the contraction of one side of the heart, while the other does not pulsate, or contracts somewhat feebly. It is a conception which was suggested first by Skoda,[1] and afterwards revived by Leyden[2] and Roy.[3] It is an explanation which has been somewhat difficult to accept, on account of what we know as to the structure of the heart. The circular fibres of the heart of both sides are so closely associated, that it is extremely difficult at first sight to grant that the one side of the heart may contract without the other; such was my own belief until a few years ago, when Mackenzie first published his observations. Mackenzie's work is marked by such absolute accuracy that everything which he publishes must be accepted with a bias in its favour, and these tracings of his go a long way to show that there is a possibility of this condition of hemisystole. In the tracing shown in Fig. 11, borrowed by permission from the work of Mackenzie,[1] may be seen the movements of the right internal jugular vein and of the apex beat. The interesting point of the tracing lies in the fact that whereas for the first and second contractions of the right side of the heart, as shown by the beat of the right internal jugular vein, there are pulsations also of the apex of the heart—showing that the left and the right sides of the heart were beating simultaneously—during the third pulsation of the right side of the heart there is no corresponding apex beat at all; we must therefore allow that such a tracing as this proves most distinctly that at any rate the left side of the heart may contract so very feebly as to give rise to no tangible evidence of its pulsation. It is perfectly true that such a condition as this can only take place when the heart is in an extremely feeble condition—the state of matters that takes place in experimental physiology when the functions of the heart have been so seriously disturbed that one portion of it alone acts; such a condition as this is only found in the gravest stages of heart failure.

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[1] "Auscultation and Percussion," trans. by Markham, 1853, p. 158.
[2] *Virchow's Archiv*, 1868, Bd. xliv. S. 365, and 1875, Bd. lxv. S. 153.
[3] *Edin. Med. Journ.*, 1878, p. 594.

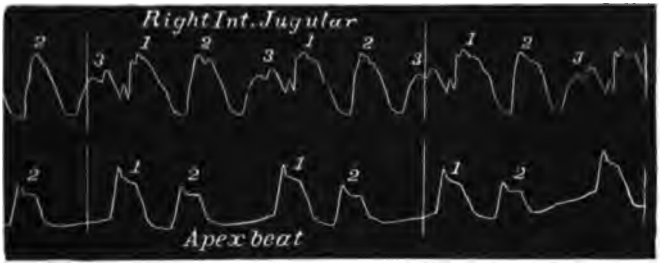

FIG. 11.—Tracings from jugular vein and apex beat in a case of apparent hemisystole.

All that now remains to be said is concerned with the methods of treating pulse irregularities. Once more let me again, even at the risk of being considered wearisome, repeat that the prognostic significance of irregularity is commonly regarded from a point of view which is much too pessimistic. Here, as in all other affections, we must trace the symptoms to their source and treat them according to their causes. When the morbid symptoms are the result of toxic agents, the first indication is to get rid of them. In the case of the microbic toxines time alone will serve to bring about their disappearance, but tonic remedies assist in the process of recovery. The products of faulty metabolism, in gout and its congeners, must be removed by the usual methods. As regards the chemical agents, the first point is to cease using them, and to employ the nervous tonics. When the symptoms are due to weakness of the heart itself, it is very interesting indeed to observe that by strengthening the heart by drugs of the purely cardiac type, such as digitalis and strophanthus, irregularity can be curbed and abolished. This is especially true as regards the irregularity of middle life. With regard to youthful irregularity, its causation is extremely variable. If it is due to some simple emotional or psychical disturbance, the great point is to get rid of that disturbance. If it should be due to a weakness of the vagus system plus some irritation in any other viscus, what has to be done is to allay the irritability of the vagus nerve either by the bromides pure and simple, or by a combination of strychnine and hydrobromic acid, which is found to be extremely valuable, while the irritation elsewhere is allayed. If the proximate cause should lie solely in disturbance of such a neighbouring viscus as the stomach, a very simple line of medication to that disturbed organ, in addition to the hydrobromic acid, will bring the irregularity to an end. There are some other additional points in regard to irregularity, but they fit in more thoroughly with palpitation, and will be discussed in my concluding remarks.

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[1] "Study of the Pulse," 1902, p. 294.

CLINICAL RECORDS.

A RARE AND INTERESTING FORM OF CARDIAC DISEASE IN THE ADULT.

By J. R. O'Brien, M.D., *Lowestoft.*

Although congenital pulmonary stenosis constitutes one of the commonest varieties of cardiac malformations, it is rare to find such a condition in adults over 20, as the majority of them die before they reach this age. It is difficult to distinguish clinically between a stenosis of congenital or acquired origin, as the following case will show.

A young man, æt. 23 years, came to me last May, complaining of weakness and shortness of breath on exertion; he was pallid in appearance, and well nourished; his family history being excellent, and his previous personal history good.

The pulse was full, soft, and markedly dicrotic. A sphygmographic tracing I took with a Dudgeon's sphygmograph shows a high systolic wave suddenly falling to a good-sized dicrotic wave. Another tracing shows a simultaneous record of radial and venous pulsation.

On making the patient stand up, the pulse markedly increased (15 to 20 beats per minute). There was well-marked pulsation of the carotids, although very slight venous pulsation. Inspection of the chest wall revealed only a slight movement at the apex. Palpitation showed a faint apex beat in the fifth space in the nipple line. There was also felt marked beating above the epigastrium; there was no thrill over the region of the heart. Percussion yielded marked dulness a finger's breath to the right of the sternum, and to the nipple line to the left. The upper dulness of the heart was in the parasternal line at the third rib.

On auscultation, a loud systolic murmur was heard, of a somewhat rough character, filling up nearly the whole time between the first and second sounds; this murmur was not, however, unduly prolonged into the second sound or beyond it. It was heard loudest over the second left costal cartilage, and also well down the sternum. It was also distinct over the second right costal cartilage; but not so loud as over the left. It was audible as high as the clavicle, but was not propagated up the carotids. It faded away towards the apex, and was not heard in the axilla. It was propagated on the left side of the chest up towards the apex of the lung and also slightly on the right. It was also heard posteriorly between the scapulæ, most marked on the left side. The second sound was reduplicated and free from any murmur.

As to diagnosis, we may begin by excluding the various possibilities. It was *not aortic;* because the murmur was heard loudest over the second left costal cartilage, and was not propagated into the carotids. There would likely have been a greater enlargement of the left heart and increase of the apex beat if the murmur had been due to aortic stenosis. Also the areas in which it was propagated are unusual for aortic murmurs. The character of the pulse simulated *aortic regurgitation*, namely, the exaggerated visible pulsation, its full character with sudden collapse, and the fact that on grasping the forearm with the hand, the radial artery could be plainly felt throbbing almost up to the elbow; the sphygmographic tracing shows, however, that it could not be from a case of aortic regurgitation, for the simple reason that there is never such a marked dicrotic wave. The absence of a diastolic murmur is also against there being aortic regurgitation. The tracing is also against aortic stenosis, but I am aware that sphygmographic tracings either of aortic stenosis, or of regurgitation, may have no particular character when these conditions are merged one into the other. *It is not mitral.* The fading away of the murmur as we approach the apex is against the mitral origin. *It is not tricuspid.* Were it due to tricuspid regurgitation, there should be much more distinct signs in the veins, as loud tricuspid murmurs cause marked pulsation in the veins, and are usually softer. There is only now left a pulmonary murmur, due to obstruction either at the orifice (stenosis of the pulmonary valves), or a tumour pressing upon the pulmonary artery, or a patent ductus arteriosus.

Although some of the signs in the case of a patent arterial duct resemble mine, yet they differ markedly from a propagation point of view, and, for instance, in the time, duration, and propagation of the murmur, also in the absence of thrill. On these grounds I must therefore exclude patent arterial duct; at least they argue against it. A mediastinal tumour might conceivably give rise to such a murmur; but one would expect other signs of pressure in the veins and bronchus. Besides, except the præcordial dulness, there is no dulness behind where the murmur is well heard. Again, murmurs due to pressure and communicated through a tumour are generally of a much softer character. There finally now remains *stenosis of the pulmonary orifice*, which this case now seems to me to be. In favour of the diagnosis being pulmonary stenosis are the following facts:—(1) The enlargement of the right ventricle, which is evidently hypertrophied to overcome some obstruction to its work. (2) The resemblance in time and duration of the murmur to an aortic systolic murmur. (3) The area of propagation; this can only be explained by the blood carrying the sound into the lung by the pulmonary arteries. (4) The divergence in time and propagation of the murmur from Dr. Gibson's[1] case of patent duct and the absence of thrill, suggesting that it is not patent ductus arteriosus, although in some respects it resembles the latter. Against this view of pulmonary stenosis, however, is the fact that such conditions are often associated with marked cyanosis (here absent); and the almost invariable rule that they are of congenital origin. Of its duration I can get no account whatever, except that two years ago (he was not under my care then), when examined as a candidate for admission into some society, he was rejected by the doctor, evidently because of this murmur. As I have already mentioned, his past history is excellent; there is no account of any illness during his previous lifetime, he has always enjoyed good health. Possibly the pulmonary stenosis has been present since birth, and never detected. One occasionally, for instance, comes across well-marked aortic stenosis in people who have never been the least incommodated thereby. Seeing that the hypertrophy of the right ventricle has evidently fully compensated for the defect, this case is possibly of congenital origin. It at all events is a highly interesting case, and worth recording.

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[1] Recorded in *Edin. Med. Journ.*, July 1900.

REVIEWS OF BRITISH AND FOREIGN LITERATURE.

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The Development of the Human Body. By J. PLAYFAIR M'MURRICH, A.M., Ph.D., Professsor of Anatomy in the University of Michigan. With 270 Illustrations. London: Rebman, Ltd.

PROFESSOR M'MURRICH'S manual of human embryology is an extremely readable and interesting, but at the same time a somewhat disappointing book, on account of some inconsistencies of statement and some incompletenesses of detail which must deteriorate its value to the student. The matter it contains is well up to date, and the chapters on the germinal elements, the development of the external form, the digestive tract and its glands, the urinogenital system, the nervous system, and the organs of special sense, are particularly good.

One of the most valuable features of the book is the introduction of short accounts of the phenomena of development in lower forms, whenever those phenomena throw light upon the conditions met with during the development of the rudiments and organs of the human body; and the value of this feature is increased by the care which has been taken, in the cases of all illustrations which do not represent conditions seen in human development, to indicate the animals in which the phenomena illustrated are observed; thus the confusion which is so marked in many descriptions of developmental processes is avoided, and the student is enabled to grasp the differences and similarities between the phenomena as they occur in the human embryro and in lower forms.

The arrangement of the subjects is good, a large amount of information is condensed into short and crisp descriptions, the figures for the most part are satisfactory and well chosen, and the printing and type are excellent.

When so much is praiseworthy, it seems almost superfluous to draw attention to the flaws which mar the symmetry of the whole. The book contains, however, weaknesses both in the text and the figures, which are to be regretted, inasmuch as they will be the cause of trouble and uncertainty to the reader who is commencing his study of embryology. Amongst these are suggestions and assertions not substantiated by facts, and the introduction of some figures and diagrams which are neither in accord with each other or with the text which accompanies them. With regard to the latter point, one of the most obvious examples of the imperfection noted appears in Figs. 138, 140, and 142. In Fig. 140, which is a diagram purporting to show the relation of the lateral branches to the aorta and the aortic arches, the accompanying text contains two contradictory statements—one, that the first lateral branches rise from the aortic arches and the aorta, and the other that the first lateral branch springs from the dorsal aorta just behind the point of union of the last arch (the sixth) with that vessel; whilst in Fig. 138, which represents the conditions in a human embryo, the position of the vessel in question is indicated as immediately posterior to the fourth arch; and in Fig. 142, the same vessel is seen in the rabbit arising above the fourth arch. Again, Fig. 144 shows the ulnar artery arising as a branch of the main arterial stem of the upper limb, but the text asserts that it arises from the median artery. The whole of the section dealing with arteries is weak and inconclusive, and Fig. 141, which is supposed to represent the development of the umbilical arteries, cannot be substantiated by the phenomena observable in any known mammal.

A relatively large and somewhat unnecessary amount of attention is devoted to the consideration of the formation of the primary and the secondary endoderm in different groups of vertebrates, whilst there is no clear statement as to the exact portions of the embryos which are formed from the two sections; and on one page of the text, dealing with this subject, it is stated, first, that the invagination of the secondary endoderm is practically non-existent in mammals; and, secondly, that the head process of mammals, which grows forwards from the region of the blastopore, corresponds with the dorsal wall of the invagination of the endoderm in the reptiles. The two assertions are possibly both correct, nevertheless they cannot but be confusing to the student who is considering the subject for the first time. Statements of this kind, however, are less to be regretted than the attempt which is made to homologise the human ovum with that of the bat, by assuming that what Professor M'Murrich calls the middle layer of the bat's ovum, that is Van Beneden's cytoblast, becomes transformed into mesoderm, an assumption to which neither Van Beneden's statements nor the figures which are used as illustrations lend any support. As little happy is the suggestion that the large development of the allantoic cavity in ruminants, as compared with its small development in the human subject, depends, probably, on the greater intimacy of the union between the ovum and the uterus in the latter, for a very large allantoic cavity is present in carnivora, whilst the union between the ovum and the uterus is as intimate as in the case of the human subject; further, it is certainly not conducive to the proper comprehension of the development of the vertebral column, to convey the idea that its component parts are segmented throughout the whole course of their development; and it seems strange that in a book which otherwise makes valuable use of some of the facts of comparative development, that in the account of the formation of the skull no mention is made of the parachordal cartilages and the trabeculæ cranii.

Sufficient has been said, however, to indicate that the good points of the book, which are many, are shadowed by faults which may easily mislead the student who is just commencing the study of this most fascinating subject.

Possibly in subsequent editions some of the features which now seem undesirable may be modified, and if so the value of the book will be further increased.

Arthur Robinson.

A Text-book of the Diseases of the Ear for Students and Practitioners. By Professor Adam Politzer. Translated by Milton J. Ballin, M.D., and Clarence L. Heller, M.D. Fourth Edition. London: Baillière, Tindall & Cox. 1902.

With the fourth edition of Professor Politzer's book we are provided with the standard work upon diseases of the ear in its most recent form, and with all the best and most valuable information upon the subject. As a book of reference it will prove a very useful addition to the library. This excellent English translation by the two Americans whose names appear upon the title-page, has been carried through under the direct and personal supervision of the author himself, and they are to be congratulated upon the manner in which they have done their work.

It is unnecessary to review in detail a book which has reached a fourth edition; it will suffice, therefore, to comment merely upon one or two points of special interest. As was to be expected from a knowledge of the author's work in connection with the subject of stapes fixation, he now deals with it in a separate section, under the title of otosclerosis. But in spite of the fact that he is able to depict this affection as a definite clinical type, he is obliged to admit the difficulty that exists in some cases in arriving at a precise diagnosis between otosclerosis and a catarrhal adhesive process of the middle ear.

Professor Politzer's views on the present position of operative interference in chronic non-suppurative middle ear disease are also of interest. In a word, it may be said that he condemns as unsatisfactory the various operations which have been suggested and performed for the relief of tinnitus, and deafness in these cases. On the other hand, with regard to the extraction of the ossicles in chronic suppurative conditions, the conditions and methods are fully laid down, and the operation is advised subject to certain conditions.

The chapter upon the treatment of mastoid disease, and the various intracranial complications arising in connection with middle ear suppuration, are fully discussed. It is a pity that in a book of such outstanding merit, the following should appear:—"Sero-mucous exudation (into the middle ear) is produced by a paralysis of the muscles of the palate and tube, caused by a paralysis of the facial nerve." Both experimental and clinical data have repeatedly proved that the facial nerve does not innervate these parts. A. Logan Turner.

Transactions of the Twenty-fourth Annual Meeting of the American Laryngological Association. 1902.

The *Transactions of the American Laryngological Association* are always welcomed as a valuable contribution to the literature of diseases of the nose and throat. The present volume maintains the position which previous numbers have reached. Twenty-seven papers and three addresses testify to the activity displayed by the members of the Association. Amongst these we note an interesting paper by C. G. Coakley, upon the "Pathology of Chronic Suppurative Inflammation of the Antrum of Highmore"; and another on the "Symptoms and Treatment of Chronic Empyema of the Sphenoidal Sinus," by F. W. Hinkel.

The members of the Association were fortunate in being able to enlist the services of Professors Minot and Dwight of Harvard, the former reading a paper upon the "Development of the Tonsils," the latter selecting "The Growth of the Face, and especially of the Pharynx," as the subject of his remarks. A. LOGAN TURNER.

Dangerous Trades: the Historical, Social, and Legal Aspects of Industrial Occupations as affecting Health. By a number of Experts. Edited by THOMAS OLIVER, M.D. London: John Murray. 1902.

THIS volume constitutes the first attempt in this, or, so far as we know, in any other country, to deal in a comprehensive manner with the conduct of trades and other occupations in respect to the dangers to life and health to which workmen are liable. The title "Dangerous Trades" is really a misnomer, because many of the occupations dealt with have no inherent dangers associated with them, and are perfectly healthy employments when certain obvious precautions are exercised by the workers. Still we do not cavil at the title, because, while the risks in connection with some trades are unavoidable, and they are dangerous in the highest degree, yet, on the other hand, all forms of work may become dangerous, in the absence of care and an appreciation of elementary hygienic rules. There can be no question that the present volume is an important and valuable addition to scientific literature, and that it has appeared at a most opportune time. Not only in medical circles has a greater interest been shown recently in occupational influences upon health, but also the public have evinced a desire for accurate information as to the conditions under which a large mass of their fellow men and women live and toil.

We have no hesitation in saying that those who desire authoritative knowledge, written in language from which, so far as possible, technical expressions are omitted, will find it in this work, which does Dr. Oliver, the editor, the greatest credit. It was naturally impossible for one person to encompass the whole field embraced by a work dealing with so many subjects, and Dr. Oliver therefore very wisely enlisted the co-operation of others who had made a special study of certain trades, or aspects of the question of occupation and its influence upon health. Space does not permit an enumeration of all the articles, but some idea of the scope of the work and character of the contributions will be obtained when we mention that "Infant Mortality and Factory Labour" is dealt with by Mrs. H. J. Tennant and by Dr. George Reid; "The Mortality of Occupations" and "Dust-producing Occupations," by Dr. Tatham; "Electric Generating Works," "Acetylene and its Dangers," and "Ganister Crushing," by Hamilton Smith; "Explosions and Explosives," by Major Cooper Key; "Eye Diseases and Eye Accidents in relation to Industrial Occupations," by Simeon Snell; while Dr. Oliver contributes no fewer than seventeen articles, all, it is needless to say, written in a masterly manner. We feel that by picking out the above contributions for special mention, an unintentional injustice is done to others, but we can only state that every article will be found to afford most interesting reading and valuable information. Unfortunately, owing to the editor having given each contributor a free hand to deal with the subject allotted to him in a complete manner, some overlapping occurs, but this does not really detract from the efficiency of the volume. HARVEY LITTLEJOHN.

The Practitioners' Guide. By J. WALTER CARR, M.D. (Lond.), F.R.C.P.; T. PICKERING PICK, F.R.C.S.; ALBAN H. G. DORAN, F.R.C.S.; and ANDREW DUNCAN, M.D., B.S. Lond., M.R.C.P. London: Longmans, Green, & Co.

THIS work is designed to furnish the busy practitioner with a concise and convenient source of information on any practical point on which he may find himself in doubt or difficulty. The names of the authors furnish sufficient guarantee that the information offered will be reliable. The subject matter is arranged alphabetically, and this, together with a fairly full index, renders it easy to use the book as a work of reference. Keeping in view the fact that those to whom such a work is addressed are primarily concerned with the diagnosis and treatment of disease, questions relating to etiology and pathology are but lightly touched upon, while the more practical aspects of the subject receive ample consideration. A special feature of the work is the attention given to gynæcological matters, and Mr. Doran's articles on such subjects as fibroid tumours, extra-uterine pregnancy, diseases of the ovaries, to mention only a few, will be found most useful. It has been considered advisable to exclude midwifery entirely.

Tropical diseases have been ably dealt with by Dr. Duncan; witness, for example, the articles on filariasis, plague, undulant fever, and malaria.

Among the general articles which are likely to prove most helpful to the practitioner may be mentioned those on the Lunacy Laws, the causes of unconsciousness, infant feeding, obesity and its dietetic treatment, and certain medico-legal subjects. The work contains about a dozen rough illustrations, which do not appear to us to add much to its value. ALEXANDER MILES.

Atlas and Epitome of Traumatic Fractures and Dislocations. By Professor Dr. H. HELFERICH. Authorised translation from the German. Edited by JOSEPH O. BLOODGOOD, M.D., Baltimore. Fifth Edition, Revised and Enlarged. Philadelphia and London: W. B. Saunders & Co.

WE need not do more than chronicle the appearance of a fifth edition of Helferich's "Atlas of Fractures and Dislocations," which is already so well known to English readers, and of which we have already expressed our appreciation. We never cease to admire the artistic illustrations, of which there are over 400 in the work, nor to profit by a study of them. Where all are so good it is needless to select any plates for special praise, but we cannot refrain from remarking on the teaching value of the pictures on Plate 30, illustrative of Kocher's manipulations for the reduction of subcoracoid dislocation of the shoulder; and on those depicting the appearances in middle meningeal hæmorrhage from fracture of the skull, injuries of the spine, and injuries about the elbow and wrist joints, to mention only a few. The introduction of a series of radiographs of normal bones and joints adds greatly to the value of the radiographic representations of injured parts. Dr. Bloodgood's translation of the text leaves nothing to be desired. ALEXANDER MILES.

Transactions of the American Ophthalmological Society. Thirty-eighth Annual Meeting. New London, Conn., 1902. Vol. ix., Part 3. Published by the Society, 1902.

THE volume opens with a well-executed portrait and an obituary notice of the late Dr. Henry D. Noyes, together with a complete list of his many and valuable contributions to ophthalmology.

Dr. Charles Steadman Bull contributes an excellent paper on the post-operative history of fifty cases of simple chronic glaucoma, in which he states that the best results, as to the ultimate vision, occurred in the cases in which the central vision was the best, and the fields of vision were the least encroached upon at the time of operating. He advocates simultaneous operation on the two eyes where the disease is undoubtedly bilateral. The curative action of iridectomy stands in direct proportion to the increase of tension. Early iridectomy, while the iris is still mobile, the field but little contracted, and the cupping of the optic disc slight, very often arrests the disease, at least for a long period, and preserves what sight remains. Dr. Weeks' paper on the treatment of simple chronic glaucoma by resection of the superior ganglion of the cervical sympathetic is well worthy of a careful perusal. According to the author, sympathectomy may be resorted to if iridectomy and sclerotomy fail to arrest the disease. A most interesting and exhaustive discussion followed this and the above paper, the reports being given in full.

Dr. Risley opened a discussion on the extraction of metallic fragments from the vitreous chamber. Dr. Herman Knapp favours the use of the giant magnet. In his paper on the ideal result to be kept in view in the operative treatment of convergent strabismus, Dr. Theobald advocates early tenotomy and a graduated method of rapidly reducing the strength, and the early removal, of glasses. We fail to see how, after tenotomy of an internal rectus, he can claim to get binocular vision invariably, especially for near objects. Advancement of both external recti would certainly give better results in every way, and particularly if glasses are to be dispensed with.

For the treatment of a very troublesome condition—congenital ptosis—Dr. Gruening advocates a modification of Gillet de Grandmont's operation of partial resection of the tarsal cartilage, and records some satisfactory results. This operation is almost certain to outrival the older ones. By the way, the name Ferguson, at the foot of page 576, appears to be a misprint for Fergus. Two papers—one on Ossification occurring in the Eye, and the other on Circumscribed Exudative Choroiditis—deserve special praise.

Dr. Buller's method of ligation of the canaliculi as a means of preventing wound infection in operations on the eye is, so far as we are aware, entirely new. We have recently tried his method in a very severe case of extensive sloughing of the cornea of traumatic origin, complicated with lachrymal disease, with gratifying results. No reaction followed, and the sloughing process was at once arrested after ligation of the canaliculi and cauterisation of the corneal area affected.

Several other valuable papers are fully reported, but want of space prevents reference to them. On the whole, the present volume is one of the best of this series we have seen, and we have no hesitation in saying that it forms a valuable addition to ophthalmological literature.

ANGUS M'GILLIVRAY.

A Text-book of the Science and Art of Obstetrics. By HENRY J. GARRIGUES, A.M., M.D. Philadelphia and London: J. B. Lippincott Company. 1902.

THE aim the author has had in view in preparing the present work has been to write a book that should bear the impress of his own personal observations and research, that should not be burdened with details (unimportant from the student's point of view), nor with proper names, except to designate instruments and methods of research. To write, in fact, a text-book, and not a work of reference.

These are sound principles, many text-books being so overburdened with detail and with names of authorities as to give no clear conception of the subject to the student, who is harassed with conflicting views at every turn. It is, however, possible to err in the opposite direction, and by neglecting the work of others to give an inadequate description of important branches of the subject in hand. This error the author has in places fallen into, and I would instance particularly the section devoted to eclampsia. Much work has been done of late years in this direction, useful not only in elucidating the pathology of this complication of pregnancy, but in indicating the lines on which treatment should be carried out. Very little of this work is referred to in the present volume; and similar omissions may be found elsewhere as regards recent pathological researches of importance. Such subjects as have engaged the author's own observation and research are well and fully dealt with, the chapter on puerperal infection being a case in point. In this instance the work of others has received adequate attention, and a short bibliography is appended. It would appear that the author has allowed his own interest in the various subjects to determine to too great an extent the space and attention devoted to them, and this, from the student's point of view, is to be regretted. Nowhere is this apparent lack of interest more marked than in the space devoted to the mechanism of normal labour. Such an important branch of obstetrics should have received careful attention in a work of this size, but it is dismissed in four or five pages, chiefly made up of illustrations. Nor would some of the author's views on this point meet with general acceptance in this country.

If looked at from the practical rather than the scientific standpoint, the work may be spoken of more highly. The management of labour is considered in much detail, and excellent chapters are included on the various operations. Symphysiotomy and Cæsarean section are treated well and fully, considerable space being devoted to a comparison of the relative merits of the two operations, and the indications for their employment. In Cæsarean section the author prefers to turn the uterus out of the abdomen before incising it, and he makes use of the rubber ligature to control hæmorrhage.

In the management of the third stage of labour, he assists the expulsion of the placenta from the uterus by squeezing the organ "like a lemon" with both hands during the pains. No doubt considerable difference of opinion still exists as to the advisability of helping in this way the uterine contractions, though modern opinion inclines rather to the view that it is better to leave the expulsion of the placenta from the uterus to nature, assistance being limited to its delivery from the vagina. The author does not give any information that would assist the student in knowing when the placenta was expelled from the uterus into the vagina.

The subject of uterine inertia does not receive the attention it merits, nor is sufficient stress laid on its varieties. The importance, under certain circumstances, of procuring rest by sleep is not mentioned, but stress is laid rather on the stimulation of the uterus by hot vaginal douches and bougies. The directions with regard to the assistance afforded by forceps are not explicit enough. "Contractions remaining unsatisfactory, it may become necessary to end labour by means of forceps"; the circumstances under which this procedure would be attended with grave danger of hæmorrhage are not, however, specified.

It is no doubt a matter of great difficulty at the present day for one man to write a text-book that shall compete successfully with the many that have stood the test of time and have had the advantage of much revision. It is not surprising that a first edition should present omissions or inadequate treatment of some parts of the subject at the expense of others. Such alterations as would render the present work of greater assistance to the student could be carried out without enlarging it, by omitting the chapter on copulation, which contains some very unnecessary matter, and that on midwives, which is not needed in a work of this description. G. BELLINGHAM SMITH.

Vorlesungen über Bakterien. Von Dr. ALFRED FISCHER, Professor der Botanik in Basil. 2nd Edition, Enlarged. Jena: Gustav Fischer. 1903.

THIS second edition appears five and a half years after the first, and the increase in its bulk (more than double) has been necessitated by the vast strides which have been made in the science during that time. Indeed, the wonder is that the author has been able to cover the ground he has done even with this increase. He has wisely preserved the original title of his book, "Lectures on Bacteria," as this gives him greater freedom of treatment than is compatible with the more formal "Text-book of Bacteria." The division of the subject adopted in the former edition has been preserved in the main in the present one, but, practically, every chapter has been extended and added to. The earlier chapters dealing with the structure and characters of the bacterial cell and its membranes, its intracellular products, pigments, methods of reproduction, and other biological phenomena, have not been so much altered as many of the later chapters dealing with such questions as the distribution of bacteria, water bacteria, the relation of bacteria to the nitrogen cycle, to the carbon dioxide cycle, to disease, etc. Asepsis and disinfection are more fully considered. Milk, cheese, butter, and tobacco bacteria have received short and suggestive notice. The pathogenic bacteria, though necessarily still receiving but scanty treatment in a book of this general character, have been rearranged and more fully described, and so have the subjects of immunity, phagocytosis and serum therapeutics. The book, while descending more into detail on many questions, still preserves its broad general lines, and contains much matter of interest and importance to every student of bacteriology. No bacteriologist, in whatever special direction his own study of the subject may have led him, will regret the time spent in perusal of this book. It cannot fail to give him a useful grasp of bacteriology in its widest aspects.

R. F. C. LEITH.

The Errors of Accommodation and Refraction of the Eye, and their Treatment. By ERNEST CLARK, M.D., B.S. (Lond.), F.R.C.S. London: Baillière, Tindall, & Cox. 1903.

IN the preface the author states that his handbook is based on lectures delivered to students and post-graduates in London, and that he has endeavoured to present the subject in as practical a manner as possible, all unnecessary matter being omitted. The book is copiously illustrated by carefully selected, and, on the whole, well-executed diagrams, chiefly taken from well-known text-books, while the paper, printing, and general character of the book leave nothing to be desired.

The preliminary chapters dealing with elementary and physiological optics are particularly well written, the chapters on accommodation and convergence deserving special praise. It is pleasing to note that the author favours the use of the plane mirror for retinoscopy, and that he is an uncompromising advocate of the indispensability of cycloplegics in all cases of refractive errors from childhood to puberty. The ophthalmometer, a most valuable instrument when properly and judiciously employed, meets with deserving praise, while due prominence is given to the relative importance of objective and subjective examination. In chapter xvii. many valuable practical hints will be found as to consulting-room accessories and the centring of lenses. The interpupillary measurement, however, cannot be considered satisfactory in determining the distance between the visual axes of the eyes; the corneal light reflex will be found much more reliable.

In view of the many useful handbooks on refraction already published, one is inclined at first sight to look upon another as quite unnecessary; but after carefully reading Dr. Clark's new book from beginning to end, one is bound to admit that its existence is justified by the freshness with which the subject is treated; by its all-round excellence, and by its conciseness and lucidity. It is certain to meet with much acceptance, and to hold its own with similar handbooks already in circulation.

ANGUS M'GILLIVRAY.

NOTES ON BOOKS.

MAJOR J. H. TULL WALSH, I.M.I.S., F.L.S., has revised the seventh edition of Sir William Moore's *Manual of Family Medicine for India*, published under the authority of the Government of India (J. & A. Churchill, London, 1903).

The fact that this book has reached a seventh edition and is published under the ægis of the Indian Government gives the strongest testimony possible to its usefulness. It takes up throughout its pages all the different diseases common to and peculiar in our Indian Empire. Nothing more need be said.

The sixth edition of Dr. Murrell's little work, entitled *Aids to Forensic Medicine and Toxicology* (Baillière, Tindall, & Cox, London) is prescribed by its author to be taken in small doses, three or four days before going in for examination; that is for students. In the present edition much new material has been added; indeed, much of it has been rewritten. Looking over the new edition of this book, we can confidently recommend it to students working up the subject.

Another of John Wright & Co.'s (Bristol) "Golden Rules Series," *Golden Rules of Refraction*, written by Ernest E. Maddox, has just been published. It is intended to help general practitioners who may have the energy and initiative to commence the study of refraction. It is a good thing that it supposes little knowledge of optics on the part of practitioners in general, for, as a rule, optics is not their forte. However that may be, this little handbook is crammed full of most useful data, and should be most welcome.

Lippincott's *Pocket Medical Dictionary*, edited by Ryland W. Greene, A.B. (J. B. Lippincott Co., Philadelphia and London). This is not only a dictionary but a compendium of medical facts. For instance, it contains a table of muscles, twenty pages in length, giving their names, origin, insertion, nerve supply, and actions; ten pages similarly devoted to the nerves of the body; while at the end of the volume one finds a posological table, metric, and various other medical tables, all of the greatest use for reference. The Dictionary itself includes not only the definitions but the pronunciation of at least twenty thousand of the principal terms used in medicine; and many of them are awful.

There has been a lack undoubtedly of books dealing with the application of physics to physiology and medicine for many years past. So the appearance of a *Textbook of Physics*, by R. A. Lehfeldt, D.Sc. (Edward Arnold, London) is to be commended. In the working out of the book, also, the printing of the more difficult and advanced parts in small type, so that the junior student need not peruse the same, an he like, constitutes an excellent point in the book. It were enough to indicate the scope of the volume by enumerating the headings of the chapters: "General Physics," "Heat," "Properties of Fluids," "Properties of Solids," "Sound," "Chemistry," "Electric Currents," "Electro-Magnetism," "Electro Statics," "Light."

RECENT ADVANCES IN MEDICAL SCIENCE.

MEDICINE.

UNDER THE CHARGE OF

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THE SIGNIFICANCE OF CALORIMETRIC INVESTIGATIONS FOR CLINICAL PURPOSES.

Schlossmann (*Berl. klin. Wchnschr.*, March 23, 1903) thinks that, amongst the numerous applications of experimental methods to clinical ends, which have so successfully been made during the last few decades, the subject of calorimetry has been wofully neglected, and the difficulties of the matter greatly exaggerated. Consideration of the subject shows that in calorimetry we have a valuable and important means of learning about the inner bodily processes. Of course the elaborate methods of the laboratory, the respiratory chamber, etc., are not fitted for clinical purposes. It is sufficient to estimate the calorific value of the fæces. If the calories of warmth contained in them are more than equal to 10 per cent. of those of the ingested food, the dietary is faulty.

For more than two years back Schlossmann has been enabled rapidly and accurately to judge whether the methods of nourishment severally adopted by him for various infants were rational or not by determining the calorific values of both the food and the fæces. When the diet is natural in form, composition, and amount, and still the fæces have too high a calorific value, there must be some disturbance of the secretory or absorptive processes in the alimentary canal; indeed, the combined determination of the units of heat of the food taken in, and the fæces expelled, constitutes the best test for proving the condition of the functions in the alimentary canal. Some details follow, best consulted in the original.

CLINICAL VALUE OF THE CYTOSCOPIC EXAMINATION OF THE URINE.

Bernard (*Presse méd. belge*, Bruxelles, March 18, 1903) considers in an interesting paper the clinical significance of the cellular elements as found in the urine. To obtain the same the best method for employment is centrifugalisation, more rapid and more sure than awaiting precipitation, for the fresher the urine the better the results.

However the precipitate is procured, a portion should at once be placed in a slide under a cover-glass and examined unstained. The various methods extant for fixing and staining films are not applicable to the urine; after them the most of the elements are completely altered, unrecognisable, of much less diagnostic worth than when examined untreated. This is probably due to some previous action by the urine on the cells, rendering them readily disintegrated or distorted by reagents.

The cellular elements found in the urine fall under four categories—(1) Tube casts; (2) epithelial cells from the mucous membrane of the urinary tract; (3) blood and pus cells; and (4) other cell forms. After discussing the different types of casts, Bernard directs attention to the valuable deductions which may be drawn from careful scrutiny of the different characters presented by the epithelial cells present. As a general rule, it is extremely difficult to differentiate epithelial cells of one portion of the urinary tract from those of another, altered as they generally are by the action of the urine. Three varieties, however, may with some degree of accuracy be made out.

(1) Large cells of polygonal contour, flat or partly folded on themselves, with granular protoplasm and distinct nuclei. These are the pavement cells of the lower passages, the largest from the vagina, the others from the ureters and bladder. (2) Cells of medium size, polymorph some of them, irregular, cylindrico-conical; others rounded with a clear nucleus. It is not easy to say whether these cells come from the pelvis of the kidney, the ureters, or the bladder. The rounded variety seems often to be associated with pyelitis. When associated with leucocytes they appear, in the absence of other epithelial forms, to indicate suppuration in the pelvis of the kidney. (3) The third class are small and in various shapes, cylindrical or cylindrico-conical, with granular protoplasm and a well-defined nucleus. Their source is the urinary tubules of the kidney.

SURGERY.

UNDER THE CHARGE OF

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Surgical Features of Typhoid Fever.

MacRae and Mitchell (*Johns Hopkins Hosp. Rep.*, Baltimore, vol. x. 1902) record the various surgical complications which have arisen among the 275 cases of typhoid fever treated in the service of Dr. Osler during the last two years. The cases are divided into two groups—(1) Conditions other than abdominal, and (2) abdominal conditions. The following are the main conclusions of the 275 cases: thirteen presented such comparatively unimportant complications as furunculosis, abscesses, and otitis media. The cultures in every case yielded pyogenic cocci. Periostitis of the clavicle was observed twice, and perichondritis of the thyroid cartilage once. The cervical glands became enlarged in one case, and mastitis occurred in three cases. Two of the breast cases suppurated, were incised, and healed rapidly. Of the cases in which the complications occurred in abdominal organs, one resulted in abscess of the liver, from which the patient recovered after operation. In five cases there were symptoms of cholecystitis, in three the inflammation subsided, in one the gall bladder was opened, and the patient recovered, while in one the gall bladder ruptured, and fatal general peritonitis ensued. Three typhoid patients were admitted, suffering from symptoms which closely simulated appendicitis. In one case, appendicitis developed during the course of typhoid, and the patient died. Perforation of the intestine occurred eight times. Of these, seven were operated upon, with two recoveries; a third dying of toxæmia after a week. All of these seven were recognised within nine hours except two, in which hæmorrhage from the bowel accompanied the perforation. In one case, operation was not advised, because the patient was evidently *in extremis*. Exploratory laparotomy was done in two cases, in which no perforation was found. In one, the symptoms proved to be due to intestinal hæmorrhage; in the other, to a low grade of peritonitis. The first died; the second recovered. Eleven cases, with suspicious abdominal symptoms, were not operated upon. Of these, two died, and the autopsies showed no perforation. The remaining nine recovered.

Macroglossia Neurofibromatosa.

Under this name, Abbott and Shattock (*Ann. Surg.*, Phila., March 1903) describe a case of macroglossia, which differs from the ordinary lymph- and hæm-angeiomatosis forms of the disease. The patient was a girl, æt. 4, who had suffered from an enlargement of the tongue since early infancy. The swelling had gradually increased, until the tongue was widely protruded from the mouth. The enlargement was strictly confined to the left side of the tongue, and extended back beyond the level of the circumvallate papillæ. On palpating the swelling, it appeared to be coarsely granular, and some cord-like structures could be felt in it. Towards the back part a definitely circumscribed tumour, about an inch in length, could be detected. In all other respects the tongue had the appearances seen in ordinary macroglossia. In addition to the enlargement of the tongue, the patient presented a vague diffuse fulness of the whole of the left side of the face, the ear, and the upper part of the neck. In the neck, lumps and knotted cords could be felt through the skin. When the child cried or became excited, a bright flush suffused the affected side of the face, but there was no unilateral sweating.

The affected half of the tongue was excised. The substance of the organ was firm, and bled very little, and the cut surface showed numerous convoluted and partially opaque white cords between and among the muscles. Three weeks later, the swelling in the neck was removed, and was found to be composed of "worm-like coils of semi-transparent white cords, inextricably twisted, and with knots in places." Some of the cords were thread-like, others as large as a No. 3 catheter. They invaded every tissue in the neck. The specimens showed, in a highly pronounced degree, the condition of fibromatosis of the nerves, every one of which, even to the terminal branches in the mucosa, was enlarged. These enlarged and fibrous nerves constituted the bulk of the swelling, and there was no sign of œdema or of lymph- or hæm-angiectasis. The fungiform papillæ over the circumscribed tumour at the back of the tongue were markedly enlarged. The only clinical feature which suggested the true nature of the condition was its granular feel, and the cord-like structures in its substance. The flushings are attributed by the authors to involvement of the sympathetic cord. The patient was markedly benefited by the operations, but the removal of the swelling from the neck involved division of the facial nerve, which caused facial paralysis. This was, however, to a considerable degree subsequently recovered from.

EUCAINE β.

MARCINOWSKI (*Deutsche Ztschr. f. Chir.*, Leipzig, Bd. lxv. S. 417) discusses very fully the relative merits of eucaine β and cocaine as local anæsthetics. After comparing their chemical composition, he contrasts their pharmacological action, and sums up his opinions as follows:—Eucaine β is 3·75 times less toxic than cocaine, it diffuses in the tissues more slowly; when used in suitable doses, it is as powerfully analgesic as cocaine; while it has shown itself, in general, free from the unpleasant toxic properties of cocaine. If used in toxic doses, it affects the nervous system in the same way as cocaine. It differs from it in being a vaso-dilator, in having no effect on the size or reactions of the pupil, and in causing only a very slight diminution of intra-ocular tension. It does not damage the cornea.

The hydrochlorate of eucaine β is soluble in water to the extent of 3½ to 5 per cent., and the acetate to the extent of 33 per cent. The solutions remain unaltered indefinitely, and can be repeatedly boiled and sterilised without undergoing any chemical change.

The author analyses at length his own clinical experience, and that of many others, in the use of the drug, and concludes therefrom that eucaine β is much to be preferred to cocaine as a local anæsthetic. That its use, however, is sometimes attended by awkward results is shown by the record of a case, where a woman fainted after the injection of 3½ c.c. of a 5 per cent. solution; and of another case, in which loss of consciousness and clonic spasms followed the injection of 1½ c.c. of a 10 per cent. solution. Locally, injections are often followed by hard infiltrations and swelling, and in one case the injection of 1½ c.c. of a 10 per cent. solution, before operation on a whitlow, was followed by gangrene of two phalanges. This accident the author attributed to the interference with the circulation, caused by the injection, and not to the chemical action of the drug. For infiltration, anæsthesia solutions of from one-tenth per cent. to 2 per cent. may be employed. For tooth extraction and for mucous membranes, solutions of from 2 per cent. to 10 per cent. are recommended. An exhaustive bibliography concludes the paper.

ON THE EFFECT OF RESECTION OF THE VAS DEFERENS ON THE TONE OF THE VESICAL SPHINCTER.

WASSILIEFF (*Ann. d. mal. d. org. genito-urin.*, Paris, March 1, 1903) has carried out a series of experiments to determine the effect of resection of the vas deferens on the tone of the vesical sphincter. He concludes that the improvement observed after this operation, in patients suffering from enlarged prostate, is due to diminution of the tonic contraction of the sphincter brought about reflexly. This explains the clinical fact that in many cases of acute prostatic retention, the operation gives marked relief. Pankratieff, out of thirty-nine cases, only found three in which improvement did not take place. The author also finds in this theory an explanation of the rapidity with which relief follows the operation, the patient in many cases being able to pass water freely a few hours after the operation. In addition, the abolition of the sphincteric spasm improves the circulation in the bladder.

Tendon Transplantation in Flat Foot.

Müller (*Centralbl. f. Chir.*, Leipzig, 1903, No. 2) has made an addition to the various tendon operations which have been tried in flat foot. It consists in detaching the tendon of the tibialis anticus from its insertion, and fixing it in a canal in the scaphoid. The technique of the operation is as follows:—A curved incision is made along the edge of the arch of the foot, beginning under the inner malleolus midway between it and the sole, and reaching to the base of the first metatarsal bone. The insertion of the tibialis anticus is found, the tendon detached and isolated as far as the ankle joint. The under aspect of the arch of the foot is then exposed for about 1 cm., and a canal bored through the scaphoid with a "pencil sized" trephine, from below upwards and backwards. The tendon is pulled through the canal by means of a looped suture, and the arch of the foot heightened as much as possible. The tendon is then pulled strongly downwards, its end turned up over the inner aspect of the scaphoid, and securely fixed there by a wire suture. The foot is put up in plaster-of-paris, and kept fixed for four weeks. Massage and movements against resistance are then employed, followed by gentle walking exercise, with a flat foot sole at first, later without any artificial support.

Müller advises that tenotomy of the tendo Achillis be done before the operation. He is of opinion that flat foot in many cases is due to shortening of the tendo Achillis. This shortening prevents full flexion taking place at the ankle joint, and consequently, when weight is borne on the foot, as in standing or walking, flexion takes place at the mid-tarsal joint unduly, the back part of the foot remaining in plantar flexion. The flattening of the foot follows from this. Müller has for long been in the habit of dividing the tendon in flat foot, with good results. In other cases the primary condition is flat foot, which leads to a secondary shortening of the tendo Achillis. This in its turn maintains the flat foot, and prevents its correction. The operation on the tibialis anticus is specially indicated, Müller thinks, in cases where its tendon is unusually prominent in the region of the ankle joint, when weight is borne on the foot. Under normal conditions the tendon lies close against the convexity of the arch of the foot, and helps, like a chain on a suspension bridge, to hold up the arch. Its undue prominence implies a yielding of the ligament holding it down, and indicates operative measures to restore its full power.

OBSTETRICS AND GYNÆCOLOGY.

UNDER THE CHARGE OF
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PRIMARY ABDOMINAL PREGNANCY.

THE possibility of this condition has hitherto been denied; reported cases being regarded as secondary to an original tubal gestation. In 1896, Galabin (*Trans. Obst. Soc. London*, vol. xxxviii.) demonstrated a specimen which showed evidence in favour of its being a case of primary abdominal pregnancy. The gestation sac occupied the pouch of Douglas, and contained a fœtus 2¼ in. long. Neither of the tubes showed any signs of recent dilatation. Those who examined the specimen agreed that it was probably a case of this nature, although the possibility of its being an early tubal abortion transplanted on to, and developing in, the pouch of Douglas, could not be excluded. The sac consisted of a membrane outside the chorion, resembling peritoneum. Galabin believed that a decidua reflexa had probably been developed from the peritoneal surface of the pouch of Douglas. Witthauer (*Centralbl. f. Gynäk.*, Leipzig, 1903, No. 5) describes what he regards as a genuine case of primary abdominal pregnancy; the omentum being the seat of the gestation. The patient was 23; she menstruated for ten months after her second pregnancy. There was then six weeks amenorrhœa, and uterine discharge of dark coloured blood, associated with abdominal pain and vomiting. On admission to hospital a swelling was felt in the pouch of Douglas, and to the right of the uterus. The diagnosis was tubal abortion. Two days later the patient became collapsed, and laparotomy was performed. Over two pints of blood were found in the peritoneal cavity. A piece of omentum was found adherent to the pelvic viscera. The right ovary was cystic, and was removed with the corresponding tube, which was normal. The uterus was not appreciably enlarged. The piece of adherent omentum contained a small hæmatoma, about the thickness of a thumb. It contained abundant chorionic villi, and the ovum was surrounded by blood, which separated it from omental tissue. The left tube was perfectly normal, and no villi could be found in its walls. Witthauer believed that the ovum had wandered from the left ovary across to the right side of the pelvis. In this case the difficulty again arose of excluding the possibility of a tubal abortion from the left tube, with later attachment of the ovum to the piece of omentum.

POST-MORTEM CÆSAREAN SECTION.

WEISSWANGE (*Centralbl. f. Gynäk.*, Leipzig, 1902, No. 10) reports the following case:—P., æt. 30, primipara, eight months pregnant, complained of sudden cardiac pain and dyspnœa. Death ensued almost immediately. Nineteen minutes later a living healthy child was delivered by Cæsarean section. Post-mortem examination showed the mother's death to have been due to rupture of the heart. Weisswange refers to previously reported cases. Of 331 collected cases, only in about six or seven has a living child been obtained. Pingler reported a successful case twenty-three minutes, and Jungeboldt one seventeen minutes, after the mother's death.

Bossi's Method of Dilating the Cervix.

Dührssen (*Arch. f. Gynäk.*, Berlin, Bd. lxviii. Heft 2) states that on account of the great variability in the elasticity of the cervix, Bossi's dilator cannot be regarded as a safe instrument. It is uncertain as well as dangerous, from the extensive tears of the cervix which may result from its use. He reviews all the cases which have been published in Germany in favour of the instrument, and compares the results with other methods of dilatation. In some of the cases the results were quite satisfactory. In others (mostly cases of eclampsia), dilatation was unsuccessful, perforation of the child's head being necessary to complete delivery. In placenta prævia, Dührssen thinks this method ought never to be employed, as there is no indication for rapid delivery in this condition. Arrest of hæmorrhage is all that is necessary, and the cervix in these cases is extremely prone to tear. In ten cases where this dilator was used, four children died during delivery, one mother died of pyæmia, and another had a very dangerous cervical tear. In cases where rapid emptying of the uterus is demanded, Dührssen thinks that lateral incisions into the cervix (made between pressure forceps to arrest any bleeding), or vaginal Cæsarean section, are safer and better methods to employ. Although it has been claimed that Bossi's dilator has advantages over Barnes' bags, in that it can be used with a closed cervix, that it is not associated with the risk of sepsis, and that it is much more rapid in its results, Dührssen believes that the great danger of extensive lacerations of the cervix are far greater than the advantages which have been claimed for it.

Disadvantages of Ventro-Fixation of the Uterus.

Kreutzmann (*Centralbl. f. Gynäk.*, Leipzig, 1902, No. 50) condemns this operation, because—(1) The indications for its performance are only relative, and are not universally accepted; (2) The later results frequently endanger the life and health of the patient, chiefly from complications during subsequent labours. Incarceration of the pregnant uterus is so unusual, that uncomplicated cases of retroflexion rarely call for operative treatment. The ligamentous union between the uterus and abdominal wall is frequently the cause of persistent pain, and Kreutzmann has collected six cases of incarceration of intestine following this operation. Gradeniortz (*Centralbl. f. Gynäk.*, Leipzig, 1903, No. 5) believes that the immediate results are in many cases satisfactory, pressure symptoms and down-bearing pains being relieved. But he has frequently observed severe dysmenorrhœa and chronic metritis as later results. He reports five cases where he had to reopen the abdomen on account of persistent pain at the point of union between the uterus and abdominal wall.

LIGATURE OF THE INTERNAL ILIAC AND OVARIAN ARTERIES FOR INOPERABLE CARCINOMA OF THE UTERUS.

KRÖNIG (*Centralbl. f. Gynäk.*, Leipzig, 1902, No. 41) refers to the unsatisfactory results from the usual palliative methods of treatment. He reports three cases treated by ligature of the internal iliac and ovarian arteries. He uses a silk ligature, and makes a transverse peritoneal incision, as recommended by Pfannensteil. In those cases hæmorrhage from the uterus was arrested, but there was early recurrence of fœtid discharge. There was no arrest in the progress of the disease. Lindenthal (*Centralbl. f. Gynäk.*, Leipzig, 1903, No. 10) reports three cases, and refers to eleven others previously recorded. When combined with removal of the disease, as far as possible with the curette, the results are encouraging. It is specially indicated in cases which are found too advanced for radical treatment after the abdomen has been opened.

COLPO-HYSTEROTOMY FOR INCARCERATED RETROVERSION OF THE PREGNANT UTERUS.

WENNERSTROM (*Centralbl. f. Gynäk.*, Leipzig, 1903, No. 10) reports the following case, treated by posterior colpotomy combined with division of the posterior uterine wall. P., æt. 28, 2-gravidara, admitted to hospital with all the signs and symptoms of retroversion of the gravid uterus. The usual methods of reposition failing, and symptoms of intestinal obstruction appearing, operative interference became imperative. An incision was made through the posterior vaginal wall, near the cervix, and an opening large enough to admit two fingers was then made through the posterior uterine wall, without opening the peritoneum. Through this opening a fœtus 15 cm. long was extracted. The wound was plugged with iodoform gauze, which was removed on the following day. A small opening admitting a sound was all that remained when the patient left hospital. She had a normal labour two years later. Wennerstrom contrasts the relative advantages of abdominal *versus* vaginal section in such cases.

PRIMARY CHORIO-EPITHELIOMA OF THE VAGINA.

HÜBL (*Centralbl. f. Gynäk.*, Leipzig, 1902, No. 48) records the following case. P., æt. 36, passed a vesicular mole. Eighteen months later she had a full-time labour, the child being dead. Ten weeks after confinement she complained of vaginal hæmorrhage, and on examination a growth was discovered on the lower part of the posterior vaginal wall. It was movable, of doughy consistence, and bled freely on manipulation. The pelvic organs were otherwise healthy. Microscopic examination showed typical syncytial masses and Langhan's cells. There was recurrence twenty days after removal of the primary tumour. Hübl compares his case with similar ones reported by Schmidt and Schlangenhaufer, where the results obtained by removal of the growth were more satisfactory. Hübl believes that his case proves that such growths in the vagina may be no less malignant in nature than similar growths found in the uterus.

THERAPEUTICS.

UNDER THE CHARGE OF
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Experiments in Local Treatment.

Bouchard made an interesting communication at the recent Medical Congress in Cairo, on the effect of administering drugs locally in cases where a general infection tends to become localised. In a case of acute rheumatism, a man of 60 kilos receiving 6 grms. of sodium salicylate daily, is taking 10 cgrms. for each kilo of tissue, whether it be sound or diseased. But the soft part of the joint, which is the real seat of the disease, will only weigh 50 to 100 grms., so that the amount which actually cures the local affection is some 5 to 10 mgrms. But to obtain this it has been necessary to absorb 599 times the amount required. As a matter of fact, acute rheumatic arthritis yields to extremely minute amounts of sodium salicylate if it be injected locally. Bouchard has seen the arthritis cut short by the injection of 3 cgrms., and it is exceptional if a rheumatic arthritis is not cured by the local injection of 10 to 20 cgrms. dissolved in 2 to 4 c.c. of water. The effect is not due to simple revulsion, as in that concentration the solution is not irritating; nor is it due to abstraction of fluid, since the effect is obtained even if the salicylate solution be isotonic and have the same osmotic tension as the blood. In a series of cases of acute rheumatic polyarthritis, Bouchard has seen 5 to 10 cgrms. of sodium salicylate cause disappearance of the swelling, redness, and pain in the joint treated, while the other joints involved were not benefited, and other joints or serous membranes may be subsequently attacked. Thus, one can at will cure any one joint. The effect is purely local, and is not due to absorption into the blood or to nervous influence. The local treatment is uncertain, as it does not prevent the further spread of the disease to other joints or serous membranes. Consequently, during the acute stage of rheumatism, or if it be of a wandering type, general treatment is obligatory. If it fails, then local injection may be used. When the rheumatism is past the progressive stage, and no longer exists as a general infection, but merely leaves local manifestations, the local joint treatment may of itself prove sufficient. Similarly, the injection of minimal doses of sodium salicylate into the painful chest wall has cut short the development of pleurisy, and pericarditis has thus been cured. The injection should be made in immediate proximity to the affected structures, but not into the joints or serous cavities themselves, but in the surrounding tissue, or even into diseased tissue itself. For the local treatment of syphilitic manifestations, Bouchard has used the following formula with great success:—Biniodide of mercury, 0·01 grm., pot.

iod., 3 grms.; water, 100 c.c. Of this, 2 c.c. are injected locally. It is also very effectual in relieving the pains of locomotor ataxia.—*Rev. moderne*, Paris, January 1903.

HELMITOL—A NEW URINARY DISINFECTANT.

Heuss, as the result of his experience of this drug in cystitis, bacteriuria, etc., claims that helmitol is more powerful as an urinary disinfectant than urotropin. Both drugs are formaldehyde combinations, but urotropin in presence of alkaline fluids only gives off formaldehyde very slowly, whereas the new drug parts with formaldehyde much more readily. Helmitol is a white crystalline powder soluble in water, with an acid reaction and pleasant taste. Experiments have shown that its action is more powerful and lasts longer than urotropin. In addition it possesses marked sedative properties. Heuss uses helmitol in doses of 1 grm. dissolved in a glass of water, three or four times in the day. He has given as much as 8 grms. in the twenty-four hours, and the only unpleasant effect was a slight tendency to diarrhœa. Of sixteen cases of cystitis, mostly of considerable standing, eleven were completely cured, while of the other five, two are not improved, and two are still under treatment. A case of bacteriuria, which had persisted for years despite treatment, has apparently been cured by three weeks' use of helmitol. In a few cases Heuss has applied the drug locally in the form of a 1 to 2 per cent. watery solution injected directly into the bladder.—*Monatsh. f. prakt. Dermat.*, Hamburg, 1903.

ABSORPTION OF IRON-SOMATOSE.

Matzner has published an interesting pamphlet giving the result of feeding experiments on hens and human beings. The eggs of hens fed with iron-somatose contain more than the ordinary quantity of iron. The iron can be readily shown in the yolk, and appears in concentric layers, the centre of the yolk remaining free from iron. The iron reaction did not intensify after the fourteenth day, though the hens were fed with iron for fifty days. The iron was apparently only loosely combined with the tissues, since it could be detected by the ordinary staining reactions. On killing the hens, the absorption of the iron in the duodenum and its transportation by leucocytes along the lymphatic channels to the liver could be readily demonstrated. In the hen the excretion takes place in the lower cæcum. Matzner then examined the tissues of an old man, who, for thirteen days previous to his death from marasmus, received daily 20 grms. of iron-somatose, corresponding to 0·4 grm. iron. In this case also it was shown that the duodenum was the chief place of absorption. The cylindrical epithelium of the villi was diffuse green after staining with HCl and ferrocyanide, while along the basal membrane blue particles of iron could be seen. In the stroma of the villi there was little free iron, but the leucocytes were richly laden with iron particles, while in many villi the central canal was packed with iron, both in the free and in the enclosed form. From here the iron could be readily traced along the mesenteric lymphatics to the glands. In the glands the cortical portions are packed with lymph corpuscles laden with iron. These cells seem to break down, liberating the iron, so that the efferent vessel contains much more free iron than the afferent. In the liver, iron in the form of minute particles is seen in the spaces in the connective tissue accompanying the portal vessels, and is deposited in the peripheral portion of the lobules. From the liver it is impossible to trace the iron any further until we again meet it being excreted into the ascending colon and in the kidneys. Probably the excretion into the gut takes place by means of the iron-laden leucocytes passing between the epithelial cells into the lumen of the gut, but Matzner has not yet been able to demonstrate this in his preparations. As regards the renal excretion, Matzner experimented on healthy and chlorotic individuals. In the case of the two healthy individuals on a constant diet, the iron in the urine lay between 0·0008 to 0·0012 grm. per diem. On receiving 10 grms. iron-somatose daily, the amount on the second day rose to 0·0018 grm., and by the fourth day it was 0·0028 grm., at which figure the excretion remained as long as the iron was being taken. Thus, in healthy people, the amount of iron in the urine is raised to thrice the former amount, on taking an iron preparation, which is proof conclusive that the iron is absorbed. Whereas in the healthy persons the maximum excretion was reached in a few days, in the chlorotic patients the results were different. There was a rapid increase of about 50 per cent. in the iron excretion, but after that the increase was very slow, so that it took three to four months' treatment before the maximum excretion was obtained, and during this time the Hb had risen from 55 and 48 per cent. respectively to 86 and 85 per cent., with disappearance of objective and subjective symptoms. In the anæmic individual it seems the iron is not all excreted, but part of it is retained, and helps to form hæmoglobin.—*Die Heilkunde*, Berlin, 1903.

PATHOLOGY AND BACTERIOLOGY.

UNDER THE CHARGE OF

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Mixed Tumours of the Thyroid Gland.

Loeb (*Am. Journ. Med. Sc.*, Phila., February 1903) describes four cases, with illustrations, of mixed tumours of the thyroid, and refers to other four cases described by others, in which there appeared to be a combination of cancerous and sarcomatous tissue. He sums up his views upon the origin and nature of these tumours as follows:—(1) In the thyroid gland there have been found in man, and in different species of animals, mixed tumours of the type of carcino-sarcoma. All the tumours described so far have certain characteristic points in common. Although carcino-sarcomata occur in other places, the majority of them have been found in the thyroid. There also are found in the thyroid gland combinations of new formed bone and sarcoma. The facts cited in favour of the embryonic origin of mixed tumours do not apply to these mixed tumours. (2) It is not possible to determine with certainty, from the character of the constituent parts of a mixed tumour, from what kind of embryonic cells such a tumour is derived. Heterotopic tumour formations need not necessarily be produced by displaced blastomeres.

THE PATHOLOGY OF LABIAL AND NASAL HERPES, AND OF HERPES OF THE BODY OCCURRING IN ACUTE CROUPOUS PNEUMONIA, AND THEIR RELATION TO THE SO-CALLED HERPES ZOSTER.

HOWARD (*Am. Journ. Med. Sc.*, Phila., February 1903) concludes that—(1) Herpes zoster is associated with definite lesions of certain sensory ganglia, sensory nerves, and the skin capable of being excited by a variety of causes, probably the soluble toxines of various micro-organisms. The skin lesions may be on the head, neck, trunk, or extremities, corresponding to the Gasserian and posterior root-ganglia affected. (2) Various forms can be distinguished—(*a*) Spontaneous or primary herpes, possibly a specific infectious disease, the specific causal agent of which has a special affinity for certain sensory ganglia (posterior, spinal, and Gasserian); (*b*) Herpes occurring after certain definite toxic agents, *e.g.*, arsenic, carbonic oxide gas, etc.; (*c*) Herpes occurring in the course of certain acute infectious diseases, as pneumonia, cerebro-spinal meningitis, and probably of malarial and typhoid fevers. The lesions of the ganglia and of the skin in *a*, *b*, and *c* are the same, and the processes are probably identical; (*d*) Herpes simplex affecting the lips and nose in coryza, gastro-intestinal intoxications, etc., and genitals, has not been sufficiently investigated to be classified; no evidence exists for or against its connection with changes in the nervous system. (3) The changes in the skin are illustrative of particular forms of necrosis and inflammation. (4) Herpes should be classified according to its relation to changes in the nervous system.

THE CAUSE OF CARDIAC ARRYHYTHMIA IN ACUTE ARTICULAR RHEUMATISM; ITS IMPORTANCE AS A VERY EARLY DIAGNOSTIC SIGN.

ACHALME (*Arch. gén. de med.*, Paris, September 1902, p. 257) says that the cardiac irregularity which appears early in acute articular rheumatism is due either to a toxic disturbance of the cardiac nervous mechanism, or to a local infection of the myocardium by some micro-organism, and himself believes that the latter is correct. He isolated a bacillus from the blood of several cases, and injected 2 c.c. of a culture thereof into the ear-veins of a series of rabbits. In 60 per cent. of the cases a definite cardiac irregularity occurred in from six to twelve hours after the injection, and before any other phenomena. Death ensued in from twenty-four to forty-eight hours, or eight days, according to the age of the animal. A few recovered. In the young animals, which die rapidly, numerous bacteria are found in the clumps in the myocardium, while in the older ones, which live longer, a fibrinous pericarditis is found, no bacteria being found in the exudate, but present here and there in the myocardium. If death be delayed for four or five days, all the serous cavities contain a serous exudate, which is also sterile. He thinks, therefore, that the cardiac irregularity in man is due to a bacterial infection of the myocardium, and inasmuch as it appears four or five days before the joint symptoms, is an early diagnostic sign of great importance.

REGENERATIVE CHANGES IN THE LIVER AFTER ACUTE YELLOW ATROPHY.

MacCallum (*Johns Hopkins Hosp. Rep.*, Baltimore, 1902, vol. x. p. 375) describes the case of a boy, æt. 13 years, who was ill with symptoms of acute yellow atrophy for fourteen days. Six months previously he had been ill for three months. The liver weighed a little more than 19 oz., and, in addition to acute red atrophy, showed a large projecting mass, green in colour, on the right lobe, and a number of similar but smaller nodules in the Spigelian and left lobes. They looked like new growths, but were nodules of compensatory hyperplasia of the liver cells. Regeneration of the destroyed liver cells in yellow atrophy may arise when the liver cells are completely destroyed by cellular buds sprouting from the interlobular bile ducts, and passing into the degenerated lobule, and becoming modified to resemble liver cells; or it may arise from the imperfectly destroyed liver cells, especially those around the interlobular vein, proliferating to form adenomatous masses, and so giving an appearance of a new liver lobule.

BLOOD CHANGES IN SYPHILIS.

THERE are two papers on this subject in the *Deutsches Arch. f. klin. Med.*, Leipzig, Bd. lxxv. Nos. 1 and 2, one by Justus on the blood changes in syphilis treated with mercury, and the other by Löwenbach and Oppenheim on a study of the blood in late syphilis where there is ulceration and gummatous formation. In the former, Justus reviews the various communications which have been published on the "Justus blood test," and states that his own experience now includes twenty-two cases. In his latest series of ten cases, in which the syphilis was dubious, the characteristic decline in hæmoglobin after mercury was given, which is the essence of the test, was confirmed by rapid recovery under specific treatment. He thinks that Brown and Dale, who are the only writers who have published negative results, probably failed through administering too small a dose of mercury, only 20 grs. In Löwenbach and Oppenheim's communication, it is pointed out that in the later stages of syphilis both the hæmoglobin and the amount of iron in the blood are materially diminished. The findings of both hæmoglobinometer and ferrometer harmonise.

STRUCTURE AND ETIOLOGY OF CANCER.

Feinberg (*Deutsche med. Wchnschr.*, Leipzig, 1903, No. 4) reports his results from staining cancer cells and tissue with the methylene-blue eosin stain. He states that it reveals cells in which the nucleus is of the peculiar and exclusive type of independent unicellular living beings. It differs from the nucleus of all other cells, in that it never contains nucleoles or anything suggesting a framework for the nucleus. The chromatin substance, which in other cells forms the framework, in these cells is collected into a simple compact body, which he calls *Kernpunkt*, or the nucleus point. This nucleus point is always to be found when the cell is at rest. He thinks that the constant presence, in cancer tissue, of numbers of these cells is an important factor in the etiology of cancers. He thinks that the investigations of Soudakewitch, Foa, Plimmer, and Sawtschenko, among those who have published communications upon parasites in cancer, are alone entitled to full consideration, as they are based on the technique of experts, and that closer study will show that these observers and himself have described the same object, namely, the unicellular animal or vegetable organism referred to above.

THE KIDNEY IN SCARLET FEVER AND DIPHTHERIA.

A FORM of parenchymatous nephritis supervenes in many cases of scarlet fever and diphtheria, but inasmuch as most cases of this kind recover, it is difficult to be sure of the exact nature of the pathological changes which were present. Huebner (*München. med. Wchnschr.*, 1903, No. 4) describes the kidney in two pure cases of each disease. In scarlet fever there was a pronounced hæmorrhagic inflammation, the glomeruli being primarily, and the epithelium secondarily, involved, while in diphtheria the degeneration of the epithelium of the convoluted tubules, particularly, was the primary lesion, there being little or no hæmorrhage.

EXAMINATION OF THE BLOOD IN HYDATID CYSTS; A LOCAL AND GENERAL EOSINOPHILIA.

SABRAZES (*München. med. Wchnschr.*, 1903, No. 13), from the examination of a number of cases of hydatid cyst in his own practice and a further number in the practice of one of his colleagues, claims that the blood changes may form an important help in diagnosis, particularly in isolated and deep-seated cysts, where ordinary clinical methods are inconclusive. He says there is always a neutrophile polymorphonuclear leucocytosis, and also a less extensive but still well-marked eosinophilia. The average was 694 per c.c. (the normal average being about 180 per c.c.). The contents of the cyst may show eosinophiles, whilst the connective tissue wall surrounding the cyst shows them in considerable numbers. The intensity of this eosinophilia corresponded with that of the blood, showing that the echinococcus was positively chemiotactic for eosinophile leucocytes. He generally found them associated in the cyst contents with Charcot's crystals. There was no change in the red cells.

UNUSUAL GONOCOCCAL LESIONS.

ARTHRITIC, endocarditic, polyarthritic lesions and abscesses due to the gonococcus have been frequently described, but a pneumonia of the same character has not hitherto been recorded, though the possibility of its occurrence is obvious enough. A skin ulceration due to the gonococcus is also an exceptional lesion. The former (the pneumonia) is described by Bressel and the latter by Salomon, both in the *München. med. Wchnschr.*, 1903, Nos. 13 and 9 respectively. The pneumonia occurred during an attack of ordinary acute urethral gonorrhœa, and the ulcer in a girl apparently as a primary gonococcal lesion of both labia minora. In both cases the discharge from the lesions (the sputum in the pneumonic case) showed the gonococcus in pure culture. That the organism was the gonococous and not an organism which resembled it, was apparently proved by staining, cultural, and experimental results.

THE EASY MICROSCOPIC DIAGNOSIS OF MALARIA.

RUGE (*Deutsche med. Wchnschr.*, Leipzig, 1903, No. 12) refers to Ross's recently published method of using thick layers of blood and staining with eosin (fifteen minutes) and methylene-blue (a few minutes), in greatly facilitating the demonstration of the presence of the malarial parasite. He strongly recommends it, and urges its superiority to the older method of thin films. He thinks it to be an improvement, however, to fix the film first. This he does by placing it in 1 per cent. formalin, then in ½ to 1 per cent. acetic acid, and then in 2 per cent. formalin. Elegant preparations are not given, but the parasites stand out prominently and are easily found, particularly crescents, which are often so sparingly found in thin films. With a Leitz objective No. 3 and an ocular No. 4 he could detect the crescents easily. He thinks that Ross's method is a great saving of time and trouble as well as being more sure.

PLEOMORPHISM IN THE COLONIES OF PATHOGENIC BACTERIA.

SAUL continues his studies in the growth forms which some pathogenic bacteria show. He has given curious results in the case of the *Staphylococcus albus*, the *Bacillus typhosus*, and the *B. coli communis*. He now (*Deutsche med. Wchnschr.*, Leipzig, 1903, No. 14, 2nd April) describes the curious forms assumed by the cholera bacillus and the bacillus of Metchnikoff. He made serial sections of the colonies after hardening them in formalin, and then stained them with methylene-blue and fuchsin. He describes and figures sections of both organisms—that of cholera at 2 weeks and 3 months, and that of Metchnikoff at 2 weeks, 1, 3, and 6 months old. These two organisms, though they may form colonies closely resembling one another, can always be distinguished. They both show extraordinary plant-like growths, with great diversity between the length and thickness of the central stem and the size and number of the primary, secondary, and tertiary, etc., lateral branches. It is difficult to give more definite descriptions without going too much into detail, but those interested should consult the original paper.

DISEASES OF THE EAR, NOSE, AND THROAT.

UNDER THE CHARGE OF
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THE BACTERIOLOGY OF ACUTE MIDDLE EAR INFLAMMATION.

FROM time to time the results of the bacteriological examination of the discharge from cases of acute middle ear inflammation have been published. The object in view in such examinations has been to determine the comparative virulence of the different infections, so that the surgeon may acquire some more definite knowledge concerning the prognosis of these cases. On the one hand, in a particular group of cases, he may reasonably expect recovery from the use of simple remedies; on the other hand, he may be justified in concluding that, in all probability, an operation will be found necessary. On bacteriological grounds, therefore, two distinct clinical types may be recognised. Dench and Cunningham of New York (*Trans. Am. Otol. Soc.*, July 1902) have published the results of their observations in this field of work, although no new facts are brought to light. Only those cases were utilised in which the acute stage was still present at the time of the examination. It becomes a matter of considerable moment to establish an accurate bacteriological diagnosis in every case of acute middle ear suppuration with symptoms of mastoid inflammation, whatever the exciting cause of the inflammation may be, in order to determine at the earliest possible period the probable necessity for operative interference. According to the report of these observers, it is shown that in one set of cases the otitis media and mastoid inflammation, if treated early by incision of the tympanic membrane, antiseptics, and the application of cold to the mastoid, will disappear; in another set, notwithstanding early observation and vigorous treatment, the symptoms will increase in intensity, and the disease progress until extensive involvement of the mastoid has taken place.

The cases in which the *Diplococcus pneumoniæ* was present as the sole etiological factor almost invariably recovered under the simpler remedies, the inflammation of the mastoid cells being of a mild form. In all the cases of *streptococcus* infection, on the other hand, there was a tendency for the inflammatory process to extend rapidly to the osseous structures. In making this statement, the authors refer only to cases coming under observation within ten days after the onset of acute symptoms. If after this time, no matter what source of infection was present, the inflammatory process had extended to the mastoid and pus had formed in the cells, the only possible course was to open the cells. In the cases of pneumococcus infection in which operation was necessary, with three exceptions, the mastoid tissue was more preserved than was the case when other infectious organisms were present. In two cases in which the clinical symptoms were severe, neither pus nor granulation tissue was found in the mastoid cells—the bone was intensely congested. In the streptococcic infection, however, there was a much more rapid development, and the osseous structures at the time of operation were extensively involved, even in those cases which were interfered with in the earliest stage of the disease. In many cases where the inflammatory process had only existed from forty-eight to seventy-two hours, extensive destruction of bone had taken place. In quite a number of them the local symptoms were not pronounced, the most prominent being a sagging of the upper and posterior wall of the meatus.

It is interesting to note further in connection with this subject, that in four cases of streptococcus infection which apparently resolved under simple treatment, the patients returned at a later date with a recurrence of local pain, and some purulent discharge from the middle ear. All were then operated upon, and extensive destruction of the bone was found. In three other cases an extradural abscess was found, while in a fourth, thrombosis of the lateral sinus existed at the time of the operation. The authors are careful to point out that every case of streptococcus infection does not require the mastoid operation, but they consider it unwise to attempt to abort the mastoid symptoms in these cases by the application of cold, restricting themselves rather to free drainage through the tympanic membrane, and cleanliness of the meatus. If, in these cases, the mastoid symptoms do not abate or disappear in forty-eight hours, immediate operation is demanded. Where the infection is a mixed one, the streptococcus being present, the same rule holds, namely, that the majority of the cases will require operation. A more systematic examination of the discharge in acute middle ear inflammation is undoubtedly called for.

These observations are very similar to the facts already recorded by Leutert (*Arch. f. Ohrenh.*, Leipzig, 1899), which hardly require more than passing reference. The benign character of the pneumococcal infection was demonstrated by him, while he also pointed out that in inflammation of the mastoid process due to the streptococcus, the inflammatory process tended to invade to the tip of the mastoid. Sinus thrombosis and cerebral abscess complicating acute otitis media originates almost exclusively in a streptococcal infection. The staphylococcus is of no importance in the etiology of acute middle ear inflammation.

SUPPURATION IN THE MAXILLARY SINUS IN CHILDREN.

THE majority of the cases of suppuration in the antrum of Highmore are met with in adults. A number of cases have been described by various observers as acute inflammation of the maxillary sinus occurring in infants a few weeks after birth. Here the onset of the illness is sudden, and is ushered in with fever, while the cheeks and eyelids become red and swollen; this is followed by discharge of pus into the nose and mouth, and necrosis of the upper jaw-bone with detachment of sequestra takes place. Such cases are not to be regarded as cases of suppuration in the sinus, because they present the signs of acute osteomyelitis, and exist as a distinct clinical type. It is not this class of case that we wish to refer to now, but rather to those presenting signs similar to what are seen in the chronic maxillary suppuration of adults, occurring, however, in children. Bourragué (*Rev. hebd. de laryngol.*, Paris, February 21, 1903) has published a series of observations which bear upon this point. After epitomising an account of the anatomy of the antrum of Highmore, both at birth and during the first dentition, he points out that when sinus inflammation occurs in children it is probably of nasal and not of dental origin; this he assigns to two factors, one arising from the fact that the temporary teeth are separated from the cavity of the antrum by the non-erupted permanent teeth; and, secondly, from the fact that infectious diseases are much more common in children, and that they are so frequently accompanied by nasal catarrh. In addition to the rhinitis associated with scarlet fever, measles, and diphtheria, he cites the occurrence of coryza associated with infantile syphilis and adenoids. In support of his contention, he quotes the results of post-mortem examinations made upon the accessory cavities in a number of children dying from such causes as diphtheria, measles, and scarlatina. Harke, who made autopsies upon thirty children dying from these affections, did not find a single case in which the accessory nasal sinuses were free from suppuration: the antrum was most frequently affected. In twenty-three children dying from diphtheria, Wolff found that in twenty-two the maxillary sinus contained pus or muco-pus. In the pus were found Klebs-Löffler bacilli, streptococci, and staphylococci.

Seven cases are recorded by the author. The ages of these patients were as follows: two æt. 11 years, one at 12, one at 13, and three at 14, 15, and 16, respectively. In one of the patients, æt. 11, the nasal discharge had existed for two or three years; and in another, nasal symptoms had been present for eighteen months, so that a possible sinus condition had existed at the age of 8 or 9. The chief symptom complained of by these patients was nasal discharge. Examination of the nose revealed a condition very similar to that met with in the adult; the presence of pus or muco-pus, varying in quantity, in the nasal cavity, evident in the middle meatus, unilateral or bilateral, as the case might be, and with or without odour.

Transillumination showed either opacity of the affected cavity or its failure to illuminate as brightly as its neighbour. Puncture of the sinus, followed by lavage, demonstrated the presence of pus. In two of the cases, æt. 11 and 12 respectively, mucous polypi of the nose were associated with bilateral antral disease.

A point of very considerable interest was observed in three of the children, namely, the existence of fœtid atrophic rhinitis. In two of these cases there was suppuration in both maxillary sinuses, while in the third the right was affected, that is to say, upon the side on which the ozænic condition was the more marked. This association of ozæna and accessory sinus suppuration in children is especially interesting.

THE TREATMENT OF LARYNGEAL CANCER BY THE X-RAYS.

THE study of the treatment of cancer of the larynx by means of the X-rays is still more or less in its infancy. Until a number of cases have been treated in this way, no positive deductions as to its real value can be made. An important question arises in connection with the trial of this therapeutic agent in cancer situated in this organ. So long as this line of treatment remains in the stage of experiment, some doubt will naturally be expressed as to the desirability of submitting cases of early laryngeal cancer to a trial by the rays. It is essential for the success of such cases that an early diagnosis, followed by an early radical operation, should be made. If, in cases which are evidently suitable for the knife, there should be delay due to an extended trial with the X-rays, then much valuable time may be lost, and a case which was eminently suitable for operation may completely change its character owing to delay thus caused by experimental treatment. On the other hand, cases which are evidently inoperable may be justly submitted to such a line of treatment. It has been stated in support of treatment by the rays, that action is not long delayed and that a fair trial can be given to it in a period of two weeks. To state the case differently, no more time need be spent than what we frequently see spent over the administration of potassium iodide in cases in which the diagnosis presents some difficulty. Bryson Delavan of New York (*Trans. Am. Laryngol. Ass.*, 1902), after carefully studying the recent literature on the subject, failed to find any satisfactory report as to the cure of cancer of the larynx by the X-rays. In one hospital in New York, four cases had been treated, two with unsatisfactory results, while two remained still under treatment, and although showing signs of improvement, were still far from being cured.

More recently, however, Scheppegrell of New Orleans (*Journ. Laryngol.*, London, February 1903) has reported a case of cure of laryngeal cancer by the X-rays. The method employed by the operator consisted in the use of a tube with a medium vacuum, as more penetration was required owing to the deeper situation of the growth. The face and chest of the patient were protected with specially prepared paraffin paper, but no effort was made to limit the rays to the diseased area alone, so that the treatment might also affect the neighbouring tissues and the lymphatic glands. The head was thrown well back, and the rays were projected upon the front of the neck so as to penetrate the skin and cartilages of the larynx. At the commencement of the treatment the rays were situated at a distance of fifteen inches from the neck, but later this was reduced to seven. The first exposure was made for ten minutes, and this was continued daily for twenty seances. At no time did any dermatitis develop.

The following points may be noted with regard to the case:—The patient was a man, æt. 57, who had suffered from hoarseness for six months. Upon the left vocal cord there was an irregular, ill-defined swelling, projecting slightly into the glottic space. There was some paresis of the left vocal cord. There was no involvement of the lymphatic glands on either side. Both tubercle and syphilis were excluded. Six weeks after the first examination, laryngoscopic examination showed an increase in the size of the mass, respiration being interfered with; the left cord was almost immobile, and ulceration had commenced. No enlarged lymphatic glands could be palpated. The patient then decided to give the rays a trial. At the end of the third week of treatment, the results were not very encouraging; the pain, however, had disappeared after the second sitting, and did not recur, in spite of the greater congestion which ensued. After the twentieth application, the patient returned to his home, as the appearance of the larynx did not offer encouragement for further treatment. Some ten or twelve days later, however, the larynx was again examined, and a marked improvement was observed. The cancerous mass, including a portion of the left vocal cord to which it was attached, had disappeared, and with it all difficulty in respiration. The expectoration had lost its purulent character. The X-rays were again commenced, and continued for ten days, at the end of which time the ulceration had completely healed. Five months after the commencement of the treatment there was no evidence of disease present. A further report of this case will undoubtedly prove of interest.

PUBLIC HEALTH.

UNDER THE CHARGE OF

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Tuberculosis Sanitation in New York.

An interesting account of the experiences of the Health Department of New York in its endeavours to cope with tuberculosis, is given by Dr. Herman Biggs, Medical Officer to the Health Department, in the *Journ. Amer. Med. Ass.*, Chicago, vol. xxxix. No. 26. In 1888 the subject of tuberculosis was brought under the notice of the Board, and in 1889 circulars containing information as to the disease were distributed in the tenement-house districts of the city, and the public newspapers were utilised for educating the people as to the communicable nature of tuberculosis. In 1893 the subject of prevention was again brought prominently forward, and after careful consideration the Board issued regulations *requiring* all public institutions to promptly report all cases of pulmonary tuberculosis coming under their observation, and *requesting* physicians to report cases occurring in private practice. It also at this time undertook the free bacteriological examination of sputum, the visitation and instruction of the sick, and the inspection, disinfection, and renovation of infected premises. In January 1897 an addition was made to the Code, declaring pulmonary tuberculosis to be "an infectious and communicable disease—dangerous to the public health"; and all physicians, and superintendents of hospitals, dispensaries, etc., were *required* to report to the Health Department all cases coming under their observation. The adoption of this ordinance was at the time stoutly opposed by most of the medical societies in New York, but during the last two years there have been few protests against the action or the attitude of the Department. No attempt has been made to strictly enforce the regulation as to compulsory notification in the case of private practitioners, but a constant advance is being made in the number of cases reported. In 1894, when notification was first started, 4263 cases were reported; in 1897, when notification was *required* by regulation in all cases, 9572 cases were reported; and in 1901 the figure reached was 17,588 (including 4191 duplicates). Since 1894 nearly 90,000 cases have been reported. The notifications are most carefully checked, indexed by name, and by street and house number, and the cases are plotted out on a series of maps covering the whole area of Manhattan Island, each case being represented by a dot. These maps are most valuable for reference. In a single street block, the inhabitants of which in 1900 numbered 1165, 102 cases had been reported from April 1894 to January 1, 1899, twenty-four of the cases occurring in a single house. In a block, which includes the Chinese quarter, there were 206 cases of tuberculosis in a population of 2102. These districts, Dr. Biggs states, represent perhaps the worst conditions existing in New York City, but are closely approached by many others. Throughout the tenement-house districts everywhere large numbers of cases have been reported.

Apart from the greater readiness to report cases, the profession are aiding the authorities by taking increased advantage of the free bacteriological examination of sputum. In 1894, 511 specimens were submitted for examination; in 1901, 6744; while in 1902 they promised to exceed 7500.

With certain exceptions, such as patients under the care of private physicians, the addresses of all notified cases are visited. If the patient is alive, a circular of information is left, and verbal instructions as to danger of infection and as to disinfection of sputum are given to those in charge. If the patient is dead, or removed from the address given, the premises are examined, and the inspector reports to the Board the steps which seem to him necessary to render them free from infection. The Board forthwith issues a ten-day order on the landlord requiring him to carry out the specified renovation. The following is the routine treatment of apartments:—"Kalsomined or whitewashed walls or ceilings are washed with a solution of washing soda (one-half pound to 3 gallons of hot water), and then kalsomined or whitewashed again; papered walls or ceilings are similarly washed and repapered; the woodwork is scrubbed with the soda solution and repainted." If at the expiration of ten days the order has not been complied with, it is handed over to the attorney of the Board for enforcement. Compliance with the order has not been refused in a single case. This is probably due, as Dr. Bigg points out, to the fact that *renovation* rather than *disinfection* is called for. "Renovation is more efficient than any method of disinfection which could be employed; and, finally, disinfection often leaves the apartment in an undesirable condition, while renovation is always appreciated by the tenant."

The attempt at disinfection of infected carpets, bedding, etc., at the disinfecting station has only been partially successful, as previous to the visit of the inspector the goods have often been washed, destroyed, or sent away to be cleaned. Where feasible, however, such goods are removed and properly disinfected.

Comparison of certificates in which death is ascribed to tuberculosis with the indices of reported cases, shows that at the present time nearly 80 per cent. of the cases have been previously reported (while living) to the Health Department. The difficulties encountered in the prosecution of the work have been—(*a*) many private physicians do not report their cases, though more and more cases are being reported; (*b*) reports from institutions, which form the larger proportion of the cases reported, are often inaccurate, incipient cases being missed in dispensaries, and occasionally erroneous diagnoses of tuberculosis being made; (*c*) patients frequently give wrong addresses intentionally; and (*d*) rarely in death certificates pneumonia and chronic bronchitis are stated as the cause of death to conceal tuberculosis.

The death-rate from all tuberculous diseases in the boroughs of Manhattan and the Bronx (Old New York) since 1886 has been as follows:—

1886	4·42	1894	3·35
1887	4·06	1895	3·11
1888	3·99	1896	2·98
1889	3·86	1897	2·99
1890	3·97	1898	3·08
1891	3·55	1899	3·08
1892	3·51	1900	3·01
1893	3·16	1901	2·89

The diminution in the death-rate shown above continues, as during the first six months of 1902 there was a reduction of 10 per cent. on the death-rate for 1901, which was the lowest ever recorded, not only for the whole year, but also for this period of the year.

Dr. Biggs is of opinion that the most pressing needs of the future are larger and better hospitals for the treatment of advanced cases, municipal sanatoria (outside the city) for the care of incipient cases, inspection of factories, shops, and all other places where phthisical persons may be found, and a more strict enforcement of the sanitary ordinance prohibiting spitting in these places, in places of public assembly, in the public halls of lodging-houses, hotels, and tenement-houses, and in public conveyances.

Epidemic Diarrhœa.

Delépine (*Journ. Hyg.*, Cambridge, vol. iii. No. 1) gives an important contribution to the already much discussed subject of the causation of epidemic diarrhœa, in a paper dealing with the striking resemblance between that disorder and many outbreaks of food poisoning. He points out that while many observers are of opinion that food poisoning is the result of eating the flesh of animals suffering from certain forms of septicæmia, enteritis, or pneumo-enteritis, the flesh owing its noxious properties to bacilli of the type of *B. enteritidis* (Gaertner), in the majority of cases the infection is the result of a more general kind of contamination. Outbreaks of diarrhœa due to the consumption of food are clinically indistinguishable from summer diarrhœa. Outbreaks of food poisoning are not confined to that period of the year when epidemic diarrhœa is most prevalent, but are most frequent then. He considers that the chief difficulty which workers have experienced in searching for the cause of epidemic diarrhœa is due to the fact that they have looked for it in the alvine discharges, or in the organs of those dying from the disease.

"On the supposition that epidemic diarrhœa is generally the result of a *more widely disseminated and less massive form of bacterial infection of food*" than in the case of more definite outbreaks of food poisoning, Delépine has during the past eight years investigated the action of bacteria which had given rise to outbreaks of food poisoning, and has studied certain pathogenic properties of cow's milk as supplied to our towns. During this time he has studied several outbreaks of infection due to milk, cheese, pork pies, tinned salmon, etc., and has studied the pathogenic action upon guinea-pigs of over 2000 samples of milk. From a comparison of the characters of the bacilli got from different noxious food substances and those of bacilli obtained from animals inoculated with various samples of milk, he is convinced that, with few exceptions, these belong to the colon group of bacilli.

In November 1894 there occurred at Manchester an extensive outbreak of diarrhœa attributable to milk. A sample of this milk, which was examined by Delépine, contained a very large number of bacilli of the colon group. There were three varieties—(1) Ordinary *B. coli communis*, only very slightly virulent; (2) a bacillus (non-virulent) resembling *B. coli* in all chemical cultural characters, but producing on gelatin plates thick mammillated colonies; and (3) a bacillus having most of the characters of *B. enteritidis* (Gaertner), and highly virulent. This milk had been partaken of by six adults, or adolescents, and an infant. All were taken ill with violent diarrhœa, sickness, and pain after an incubation period of about twelve hours. From the large number of bacilli of the colon group present, Delépine concluded that the outbreak was probably due to fæcal contamination of the milk, and in the circumstances under which the milk was produced there was abundant opportunity for such contamination taking place. If from fæcal pollution of milk such an outbreak, clinically indistinguishable from epidemic diarrhœa, could arise, he considered that a more intimate connection might reasonably be supposed to exist between epidemic diarrhœa and fæcal contamination of milk than was generally believed.

Fæcal contamination of milk admittedly occurs, and it is difficult to entirely prevent it under any circumstances. Under ordinary conditions the contamination does not seem to have any serious effect, but in summer, owing to high temperature, the contaminating bacilli rapidly multiply in the milk, and milk, originally wholesome enough, may be rendered noxious. Since 1896, Delépine has examined nearly 2500 samples of milk for bacteria capable of producing infection of a septic character, and from a study of these results, which are tabulated in considerable detail, together with his experience as regards food poisoning, his general conclusions are as follows:—

(1) Epidemic diarrhœa, as it commonly occurs in this country, is apparently in the great majority of instances due to infection of food by bacilli of the colon group (of which *B. coli communis* and *B. enteritidis* (Gaertner) are probably the two extremes), which are present at times in fæcal matter; (2) apparently this infection of food produces no serious consequences unless massive from the first, or the food is kept for a

sufficient length of time and under conditions of temperature suitable for the development of the bacilli; (3) milk, which is the common cause of epidemic diarrhœa in infants, is frequently infected at the farm or through the vessels in transit; (4) other foods are also liable to infection before they reach the consumer; and (5) of the bacilli of the colon group, which are capable of rendering milk infectious, those which do not produce a large amount of acid and do not coagulate milk are the most virulent, and are probably the essential cause of epidemic diarrhœa. This last conclusion is of great practical importance, in that "*absence of acidity and marked smell in milk is not, as generally believed, an index of safety.*"

Delépine considers that the most dangerous kind of fæcal contamination is by matter containing bacilli resembling *B. enteritidis* (Gaertner), such infection being probably associated with an infectious diarrhœal condition common to man and the lower animals, but on this point he has not been able to entirely satisfy himself. As regards prevention he suggests—(1) Measures for securing absolute cleanliness of cows, dairy hands, cow-sheds, vessels, etc. Also measures for securing similar cleanliness in persons and things coming into contact with articles of food, manufactured or otherwise. (2) To guard against the worst effects of accidental fæcal infection, food should be consumed fresh, or refrigerated, *i.e.* kept at a temperature below 4° C., or thoroughly sterilised by heat (*i.e.* by thorough cooking).

Drs. Duval and Bassett (*Centralbl. f. Bakteriol. u. Parasitenk.*, Leipzig, Bd. xxxiii. No. 1) in a short preliminary note on an investigation, conducted by them upon the summer diarrhœas of infants at the Wilson Sanatorium, Mount Wilson, Baltimore, U.S.A., state that in forty-two cases of the disease they succeeded in isolating from the stools the *B. dysenteriæ* (Shiga). The organism was also got post-mortem in scrapings of the intestinal mucosa, and in one case from the mesenteric glands and liver. The bacillus was present in large numbers in the stools of acute cases, but was only found with difficulty in mild and prolonged cases. The bacilli isolated from the different cases were identical in every respect with the dysenteric bacillus got in cases of acute dysentery by Shiga in Japan, by Flexner and Strong in the Philippines, by Kruse in Germany, and by Vedder and Duval in America. Agglutination was obtained when the organisms were tested—(*a*) with the blood serum of the patients from whom they were obtained, (*b*) with the serum of other infants suffering from summer diarrhœa, (*c*) with the serum of adults suffering from acute dysentery, and (*d*) with antidysenteric immune serum. The investigators failed to find the bacillus in the stools of twenty-five healthy children, nor was it found in the stools of those suffering from simple diarrhœa, marasmus, and malnutrition, and the blood serum of these did not agglutinate the bacillus. Duval and Bassett believe they are justified by their results in concluding that the summer diarrhœas of infants are caused by intestinal infection with *B. dysenteriæ* of Shiga, and "are therefore etiologically identical with the acute bacillary dysentery of adults."

REPORTS OF THE MEDICAL SOCIETIES.

GLASGOW MEDICO-CHIRURGICAL SOCIETY.—*April* 3, 1903.—Dr. **EDINGTON** showed a case of Volkmann's contracture, and made a short communication on the result of operation in a case shown at a previous meeting of the society.—Dr. G. H. **NICOLL** showed—(*a*) The prostate from a typical case of submucous or extra-vesical prostatectomy. The patient had not undergone catheter treatment, but had had two attacks of acute retention. There was 6 oz. of residual healthy urine in the bladder. The bladder was opened by suprapubic section, and the prostate was then approached from the perineum and removed. (*b*) Meckel's diverticulum removed by operation from a case in which it caused intestinal obstruction. (*c*) The appendix from a case in which appendicitis occurred in the sac of a femoral hernia simulating strangulated hernia. (*d*) Six recent cases of operation for depressed (birth) fracture of the skull, in which the patients were treated as out-patients after operation. The method of operating employed was to remove a disc of bone with the trephine, invert it and replace it. Union of bone was in every case firm in a week.—Professor **STOCKMAN** gave the results of some recent work regarding the treatment of rheumatism. He regards the salicylates as a specific for acute rheumatism, and recommends that their administration be continued for some time after the pain has ceased. He has found oil of Wintergreen useful as a local application in subacute rheumatism.

GLASGOW PATHOLOGICAL AND CLINICAL SOCIETY, *April* 20, 1903.—Mr. A. E. **MAYLARD**, President, in the chair.—Dr. **JOHN ANDERSON** showed as a fresh specimen, a brain in which an abscess in the Rolandic area had extended into the lateral ventricles. It was connected with a case of empyema.—Mr. **GRANT ANDREW** showed a boy operated on for foreign body in the left bronchus—attempted removal by posterior bronchotomy through the pleural cavity. A discussion on the treatment followed. An expectant line being strongly advocated by Sir Hector C. Cameron.—Mr. **HENRY E. CLARK** showed—(*a*) A bladder showing sacculation and abscess formation, from a case of enlarged prostate, also the kidneys from the same case; (*b*) a uterus, the subject of carcinoma of the body, removed by the para-vaginal method.—Dr. **JOHN H. TEACHER** reported on the intestinal concretion shown at last meeting by Dr. J. Crawford Renton, which proved to be an oat-seed concretion (avenolith) and exhibited for comparison, a number of specimens of similar concretions from the Hunterian Museum.—Dr. J. **KERR LOVE** showed a series of stereoscopic photographs illustrative of the anatomy of the temporal bone.

ANALYTICAL REPORTS.

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MALTOVA.

(Maltova Limited, Leeds.)

THE brain that first devised the conjoining of raw eggs and malt deserves a high recompense of some kind. The whole egg save the shell is made use of, providing egg-albumin, nucleo-proteids, lecithin, sulphur, and phosphorus, incorporated in a homogeneous mixture with pure malt extract. Its taste is exquisite, like honey. Indeed, its composition resembles in many ways the product of the bee, although far more ready of digestion.

On boiling it in solution, a precipitate of native proteid falls; on testing it with Fehling, glucose is shown to be abundantly present; while it rapidly transforms starch into sugar, proving it to contain an active malt extract.

Excellent to take, it is an exceptionally nourishing preparation, and one which can confidently be recommended both for young and old alike.

Maltova is now supplied in glass bottles with well-fitting metal tops, and apparently keeps well in them. As formerly supplied with cork and wood stoppers, it was apt to go bad.

ANGOSTURA BITTERS (DR. SIEGERT'S).

(Kuhner, Henderson & Co., London.)

WHEN one speaks of "Bitters" it is as a rule in connection with preprandial appetising, "sherry and bitters," "whisky and bitters," etc. Nor is there any doubt that bitters taken *secundum artem* before food act beneficially upon the gastric nervous mechanism, and fortify the stomach, especially if jaded. Angostura Bitters in this connection have long been *faciles principes*. They must not, however, be regarded only in the light of a stimulant for jibbing digestions, injured by too great indulgence in alcohol, or in victuals, for, in small quantity, when added to any form of fluid refreshment, non-alcoholic as well as alcoholic, they act as well as a Galenical preparation.

Angostura Bitters consist in a solution of certain substances, of vegetable and Venezuelan origin, aromatic and carminative of action, but analytically undistinguishable in source. Their worth is as good as their name.

MILK OF MAGNESIA (PHILLIP'S).

(C. H. Phillip's Chemical Co., New York and London.

THIS very excellent preparation of magnesia contains in each ounce 24 grs. of the hydroxide of magnesium—MgH_2O_2—mixed with water, forming a white, milky, homogeneous mixture, free from taste, smell, and from any gritty particles. As a mild laxative for children, it acts very satisfactorily and quietly; as an antacid the results are equally good, especially in irritable conditions of the mouth, and hyperacid conditions of the blood in both children and adults. A teaspoonful for children, up to a tablespoonful for adults, with as much or more water added, the dosage. When employed for its laxative effect, it is recommended that, half an hour after taking it, some lemon juice, cream of tartar, citric or tartaric acid, succeed.

MONTHLY NOTES
ON METEOROLOGY AND VITAL STATISTICS.

By A. LOCKHART GILLESPIE, M.D., F.R.S.E., F.R.C.P.Ed.,

MEMBER SCOTTISH METEOROLOGICAL SOCIETY.

Meteorological Means for the East of Scotland District, for the Five Weeks ending April 4, 1903; and for the Year from January 4.

	Temperature.			Rainfall in Inches.		Sunshine. Hours.		Mean Daily Variability of Temperature.
	Mean.	Accumulated Day-Degrees. Above 42°.	Accumulated Day-Degrees. Below 42°.	Actual.	Accumulated from Jan. 4.	Actual.	Accumulated from Jan. 4.	
Mean .	39°·8	[1] 88° [2] 156°	162° 492°	2·5	8·2	123	231	...
Observed	40°·8	[1] 86° [2] 199°	122° 378°	4·3	12·6	113	181	...
Difference	+1°·0	[1] −2° [2] +43°	−40° −114°	+1·8	+5·4	−10	−50	...

Vital Statistics.

Mortality in Four Large Towns in the East of Scotland (Edinburgh, Dundee, Aberdeen, and Leith), during March, and since January 4, 1903. Actual Numbers and Rate per 10,000 per annum.

		Total.		Constitutional Diseases.		Circulatory System.		Respiratory System.		Nervous System.	
		No.	Rate.	No.	Rate.	No.	Rate.	No.	Rate.	No.	Rate.
Deaths expected and Mean Rate for 1891–1901	[1]	1344	221	267	43·9	128	21·1	292	47·9	152	25·0
	[2]	3965	217	730	39·9	369	20·1	870	47·6	430	23·5
Actual Deaths and Rate per 10,000	[1]	1203	197	253	41·5	139	22·8	198	32·5	142	23·4
	[2]	3548	194	718	39·3	389	21·2	648	35·4	400	21·9
Difference from Mean	[1]	−141	−24	−14	−2·4	+11	+1·7	−94	−15·4	−10	−1·6
	[2]	−417	−23	−12	−0·6	+20	+1·1	−222	−12·2	−30	−1·6

	Digestive System.		Urinary System.		Pneumonia.		Phthisis.		Cancer.	
	No.	Rate.	No.	Rate.	No.	Rate.	No.	Rate.	No.	Rate.
Deaths expected and Mean Rate for 1891–1901	75	12·4	35	5·7	110	18·1	134	22·1	54	9·0
	231	12·7	97	5·3	326	17·9	365	20·0	163	9·0
Actual Deaths and Rate per 10,000	96	15·8	41	6·7	95	15·5	117	19·2	70	11·7
	269	14·7	100	5·5	312	17·1	321	17·6	178	9·8
Difference from Mean	+21	+3·4	+6	+1·0	−15	−2·6	−17	−2·9	+16	+2·7
	+38	+2·0	+3	+0·2	−14	−0·8	−44	−2·4	+15	+0·8

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* Note.—The figure 1 denotes the data for March, 2 for year to date.

The diminution in the death-rate so noticeable in January and February continued during March, especially marked under respiratory causes (= −32 per cent.). The deaths from cancer, however, were 29 per cent.; from digestive diseases, 28 per cent., and from urinary causes 17 per cent. over the average.

For the three months, the total number of deaths is 10 per cent. below the mean for the years 1891–1901; the deaths from respiratory causes, 25 per cent., and from phthisis, 12 per cent. below. Circulatory, digestive, and cancerous causes showing increases. Deaths from pneumonia with 4·2 per cent. below do not coincide with the 25 per cent. decrease from total respiratory fatalities.

The figures for the weather of the five weeks ending the 4th of April shows a considerable increase in mean temperature equal to 1° a day, due more to lack of cold, than increase in warmth. As in January and February there was a great excess in rainfall,—equal to 72 per cent.; while the number of hours of bright sunshine were about 8 per cent. below the normal.

The accumulated day degrees of warmth from the beginning of the year are slightly up; those below 42° are very much below what was expected. The rainfall since the beginning of the year is 65 per cent. above the normal; the number of hours of bright sunshine 21 per cent. below it.

EDINBURGH MEDICAL JOURNAL.

EDITORIAL.

Serum Diagnosis.

In a former editorial we considered some of the limitations of accuracy in bacteriological diagnosis so far as microscopic, cultural, and inoculation tests were concerned. In the present we shall treat of serum diagnosis in a similar manner, and this will be best done by examining the principles underlying the method. As is well known, serum tests are used either to diagnose a particular case of disease (here a known bacterium is used), or to establish the species of a particular bacterium (here the serum produced by the injection of a known bacterium is used). The principle involved in both is of course the same, namely, that in the serum of the patient infected, or animal artificially inoculated with the bacterium, a substance or substances are present which produce a characteristic effect upon the bacterium—the question is whether or not such an effect is specific. Investigations within recent years have shown that the anti-bacterial sera are merely examples of a large group of anti-sera which have the common character of being produced by the introduction of organic substances of complicated constitution into the body. Thus we have precipitins, agglutinins, anti-toxines, bacteriolysins, hæmolysins, cytotoxines, etc. These anti-sera may be arranged in two main classes, namely—(*a*) In which the anti-substance acts alone, *e.g.* anti-toxine; or (*b*) in which the anti-substance requires a substance normally present in the serum ("complement" of Ehrlich) to complete the effect. But in *all* the cases studied the anti-serum differs from a normal serum in its containing a substance (anti-substance) or substances which have a combining affinity for the substance or substances injected. In the case of precipitins, for example, which have supplied an important practical means of distinguishing the bloods of different animals, an animal, *a*, is injected with the serum of another animal, *b*, of different species, and the serum of the former acquires the property of producing a cloudy precipitate on addition to the serum of the latter. In the case of hæmolytic sera, the serum of an animal, *a*, injected with the red corpuscles of an animal, *b*, acquires the power of dissolving the red corpuscles of the latter, and this property is sometimes developed to an extraordinary degree.

Now, it is to be noted with regard to all the anti-sera mentioned above, that the substances injected (toxine, normal serum, red corpuscles, etc., as the case may be) contain a large number of chemical substances of complicated constitution, and in the case of a bacterial infection there are to be considered, both the toxine set free and also the substances composing the bodies of the bacteria. We may say that these various organic molecules introduced into the tissues may be arranged in two classes, namely—(*a*) those which give rise to anti-substances, and (*b*) those which have not this property. For convenience, we may call the former α-molecules. The question, therefore, becomes—Are the α-molecules peculiar to a particular bacterium or animal? The agglutinins in the blood in typhoid fever, to take an example, are produced by certain α-molecules in the bodies of the typhoid bacilli—are such molecules peculiar to this organism?

The subject has now been extensively worked out in its various fields, and the general result is that absolute specificity does not obtain. We may mention a few examples in illustration. The precipitin in the blood of an animal injected with the serum of another animal gives the most marked reaction with the latter, but may give slight reactions with the serum of other animals, especially when they are of allied species; this is true both of vertebrates and invertebrates. The precipitin obtained to human serum acts also to a certain extent on the serum of certain apes; the precipitin for the serum of a species of crab reacts to a less extent with the serum of other species of crabs, whilst with the serum of the octopus it gives no reaction (V. Dungern). In the case of hæmolytic sera a corresponding fact has been established. For example, Ehrlich, in one of his ingenious researches, showed that the red corpuscles of the ox and goat had certain common α-molecules, though most of them were different; that is to say, a serum obtained by injection of ox's corpuscles has a certain hæmolytic effect also upon the corpuscles of the goat. When we come to consider the case of anti-bacterial sera, many analogous examples might be given, and it is also found that different races of the same species of bacterium contain the various α-molecules in different proportions, so that the serum prepared by means of one race reacts in varying dilutions with other races. This has been well shown by Durham in his researches on the typhoid and allied bacilli. A typhoid serum may also react to a certain extent with Gaertner's bacillus, *i.e.* these two organisms have certain common α-molecules.

Such researches on the various kinds of anti-sera therefore show that a basis of diagnosis by a qualitative reaction of absolute specificity is wanting. But while this is so, when we come to *quantitative* reaction we find a method of great practical utility. We have stated that in each bacterium there are in all probability a large number of kinds of α-molecules; still each species has, as a rule, what we may call predominant α-molecules, and it is these latter which produce in the anti-serum its important character. A serum may react towards the corresponding bacterium in a dilution of 1 in 10,000, but may also give a reaction with a different bacterium in 1 in 10, the latter bacterium apparently containing a few of the predominant molecules of the former. It is therefore apparent that no statement can be made *a priori* as to the behaviour of a given serum with different bacteria, but that each must be experimentally worked out, and in the case of each disease the reliability and the limitations of a serum test can only be determined by long series of observations. And though serum diagnosis may surpass other clinical methods in the value of results, still by the nature of things the bacteriologist has not in his hands a method of absolute inerrancy; though here also, just as in clinical work, ability, experience, and careful observation will go for much.

The General Medical Council.

As we go to press, the General Council of Medical Education and Registration is beginning its summer session, and it seems advisable to consider a few points in regard to one of the most important matters affecting it, *i.e.* its financial position. That the members of the Council are somewhat anxious in regard to this subject, has been shown by the earnest debate which took place last year. Their apprehensions are only too well founded. There is no use shutting our eyes to the fact that, if the present state of matters continues, the General Council will, in a few years, find its coffers empty. To put the matter briefly—Of available funds the English Branch Council appears to possess between £8000 and £9000, the Scottish Branch Council between £4000 and £5000, and the Irish Branch Council less than £100. In view of these facts, it must be evident to every one that, in order to avert pecuniary disaster, the income of the Council must be raised or its expenditure lessened. Proposals have been made, such as the imposition of an annual tax or rate upon all registered members of the medical profession, or an increase in the registration fee paid on their admission to the register. It cannot be said that either of these suggestions has been received with enthusiasm. Of the two, the one least objectionable would be the former, seeing that an increase in the registration fee would tell most severely upon the junior members of the profession. It need hardly be added that for the introduction of either of these changes an Act of Parliament would be necessary.

It seems to us that it would be extremely easy to curtail the expenditure of the Council, while in no way interfering with its efficiency. At present it is the custom of the members of Council to commence their proceedings in the afternoon, and therefore one-half of the day is not employed in the business of the Council. There is no reason why the Council should not begin its business at an earlier hour, and spend the entire day in its consideration. Such a proposal would probably meet with the approbation of the provincial, the Scottish, and the Irish members, as they would be able to save much time, which is of value to them in their professional positions. To most of the members it must be a considerable sacrifice to sit in the Council at all, and any proposal calculated to lessen the length of each session would be agreeable to them. It is to be hoped that some arrangement of this kind may be tried before the Council enters upon any new financial departure.

University Authorities and Chemistry.

We consider it our duty to enter a protest against the recent action of the authorities in the University of Edinburgh with regard to the teaching of Chemistry. It is reported that something like 70 per cent. of the candidates failed in this subject at the recent examinations, and that the majority of those who were rejected received notices stating that they must attend a special tutorial class delivered by one of the assistants in the Chemical Department of the University. This is surely an ill-advised innovation. It does not become a great University to command the attendance of its undergraduates at what will certainly be regarded as a coach class. It is unfair to parents to increase the financial burden, which has already been made the subject of complaint. It is unfair to the student to interfere with the proper progress of his curriculum. The majority of those who have received commands to attend this tutorial class ought, in the ordinary course of events, to have commenced their studies in Practical Anatomy. They have not been able to do so, and the result will be that they will endeavour to crowd their dissections into one winter and one summer session. Finally, it will be an unfortunate precedent in the Edinburgh Medical School if the University authorities are to dictate, not only as to what classes a student shall or shall not attend, but also as to where he shall attend them.

The University Council and its Assessors.

We desire to offer our congratulations to Dr. Lowe on his election as one of the Council's Assessors to the University Court. Dr. Lowe's success is not the less gratifying because it was unexpected. For some years past interest in the doings of the Council and its Assessors has been at a very low ebb, nor is the reason far to seek. It is a fairly patent fact that the University General Council and its affairs are in the hands of a clique, who are apt to regard their positions in the Council as stepping-stones to the Court. The results are visible in the meagre attendances at the Council meetings, and the long-winded and prosy orations made at meeting after meeting by the same ever-recurring individuals.

It cannot be too sufficiently known that the medium of the General Council is the only one through which graduates can express their feelings and voice their sentiments on great questions of University policy. The Council elect four Assessors to the Court, and these four votes, if combined with the undergraduate representation, are in themselves sufficient in the majority of instances to effectually control the Court itself. It is therefore very much to be regretted that these Assessors are at present elected, not to represent the Council and the interests of the graduates, but the private interests of a clique, or occasionally those of a political association.

Perhaps the Council would be well advised to seriously consider the personnel of its Standing Committees—they have been published quite recently—and then a few judicious alterations might be effected. We may remind University graduates that two more Assessors fall to be elected at the next meeting of the Council.

The New Hospital for Infectious Diseases.

THE opening of the new Edinburgh Hospital for Infectious Diseases by His Majesty the King, upon Wednesday, 13th May, was a gracious act of the Sovereign amidst the multitudinous duties which his visit to the capital of Scotland entailed.

It was most fitting that His Majesty, who has shown himself so deeply interested in hospitals, and in all schemes having for their object the improvement of the public health, should have performed the ceremony, and it is a matter for congratulation that we can affirm, without fear of contradiction, that the building was worthy of the occasion. It is nearly ten years ago since the scheme to provide the city of Edinburgh with a hospital for infectious diseases, of a modern type and in keeping with its other great curative institutions, first took practical shape.

Up till the year 1884, the treatment of cases of fever was undertaken by the Managers of the Royal Infirmary and by the parish authorities, but when at this time the responsibility for the care of such patients was thrown upon the Town Council, this latter body had to make the best arrangement it could at short notice.

The old Royal Infirmary was accordingly adapted for the purpose, and it must be acknowledged that it has served its object well, when the many difficulties which have had to be contended against are considered, and when the enormous increase in the number of patients seeking admission now, as compared with former years, is borne in mind.

It is not a vain boast that the new hospital is second to none throughout the whole country. The site is incomparable for the purpose. One hundred and thirty acres of land, with a gentle slope southwards, protected by Craiglockhart Hill behind, and with a magnificent, uninterrupted view of the Pentlands in front, is an ideal situation, more especially when within easy access of the city. In size, the hospital will suffice for all calls upon it for many years to come. It contains 600 beds, in pavilions apportioned to the reception of patients suffering from scarlet, enteric, and typhus fevers, diphtheria, measles, whooping-cough, and chicken-pox, while an abundant number of small isolated buildings will afford ample accommodation for treating such other diseases as may require isolation. The administrative blocks consist of a splendid nurses' home, servants' home, kitchen, general offices, laundry, ambulance building, and pathological department, with a lecture theatre.

Owing to the extent of the site, it has been possible to provide ample recreation or airing grounds for each class of disease, and it can truly be said that nothing which modern science and knowledge can suggest in order to promote health and aid recovery has been omitted.

Local Medical Associations and the British Medical Association.

It was to be expected that the altered constitution of the great Association of medical men, the largest probably of any place or time, would move uneasily the "will to live" of smaller bodies. An instance of this is foreshadowed in the proceedings of the Fife Medical Association. While not connected with that social body in any way, we have been privileged to witness some of its functions, the memory of which is pleasant to us, and we wish it well. It is on that account that we trust that its members will think twice before performing the "Hara-kiri" or Happy Despatch. The two bodies are no more comparable in function than they are in size. The British Medical is very largely an Association for the diffusion of medical knowledge throughout the *Corpus Medici;* in addition to which, its recent developments seem to indicate an intention to become a more efficient machine by which the will of the profession might be made known to the general public on social and political questions. These are excellent, but in no way whatever do they trench upon the function of local medical associations like that of Fife, which is a function purely social, tending to keep alive a spirit of comradeship and *bonhomie* amongst the practitioners of the Kingdom.

Our Fife friends have but to look around them, and they will see examples, all of which may induce them to observe, or conserve, the *status quo.* Edinburgh has managed to keep up all her old medical associations, even though the Edinburgh branch is, and we feel sure will continue to remain, very much alive. In Perth, it is true, the County Medical Association yielded up the ghost when the Perthshire branch was formed, nearly twenty years ago; but there are not wanting rumours that the County Association may yet find itself brought back once more to life. And in Forfarshire, how well the County Association maintains itself, the attractions of a very powerful and energetically worked branch of the British Medical Association notwithstanding. And as it is with the Fife body, so is it with other similar institutions all over the land, and to all our advice would be *Esto perpetuo!* You are filling a place which cannot well be taken by the larger body, just as she is doing work impossible to you; in the matter of ethical supervision, moreover, she is adventuring on a course fraught with danger; it is quite on the cards that if you dissolve, you will ere long find yourselves reconstituting, for man is a gregarious animal—particularly medical man!

The Middle Ages.

In the *Spectator* for April 18, 1903, there appeared an article entitled "The Apotheosis of Middle Ages," wherein attention was drawn to the very different standpoint from which the seven ages of man are now regarded, compared with that of two generations ago. While "the three-year-old child of to-day is as knowing as was the six-year-old of half-a-century ago, and the ten-year-old boy of to-day is in many respects quite as much a man as was his grandfather at eighteen," the middle-aged man has not only not approached sensibility, as he ought to have, but even taken a step backwards, and marches "alongside of youth." The middle-aged man no longer holds aloof from the companionship of his juniors, nor scorns to take their advice, under circumstances which would have been considered most derogatory fifty years ago. The junior no longer regards his middle-aged seniors as objects of awe and reverence with whom companionship is impossible. Youth is growing older; middle-age younger. On the other hand, the transition from middle- to old-age has become much more sudden.

The vital statistics for the last fifty years corroborate our contemporary in a striking manner, for they clearly show that while a greater number of the population live to middle age nowadays than formerly, no such increase has occurred in the proportion of those dying over 60. In fact, the middle-aged man of to-day has a shorter expectation of life than he of fifty years ago.

But the *Spectator* appears to us to be wrong in forecasting a return to former conditions; rather is it the other way. The more skilful medical science becomes, the greater the resultant effect upon the young; the larger the proportion of the population steered past the perils of childhood and youth into the haven of middle-age, the more active the life led (physically and mentally) by the survivors, the more intense the strain on their middle-aged organs, and the fewer proportionately to live through a long span of years.

Pathans, Ghazis, and Dentists.

One has often heard of Pathan Sepoys and Ghazis running "amok" with swords or rifles, of lunatics using a variety of instruments against the public, but a new terror has been added to existence in the person of a crazy dentist in Duluth, U.S.A. He began one morning, so the *Medical Record* says, by pulling the teeth of four men whom he found intoxicated in a saloon. Then meeting an old man in the street, and having scant regard for age, he knocked him down and extracted two of his teeth. A few minutes later he entered a house, wherein he found a woman preparing breakfast. She he also knocked down, and hauled out two of her teeth. He was then hauled up by the police. What better means of combating intemperance could there be than impressing upon the victims of alcoholism that they run a great chance of having their teeth drawn by a perfervid dentist, their skulls trephined or appendices explored by over-excited surgeons, or, if feminine, their *ores* dilated by Pizzi's formidable-looking instrument of torture, will she nill she, at the instance of some erythritic gynæcologist. Fancy a nasal specialist running around applying the electro-cautery to the turbinated bones of every one he may meet, or a bladder specialist employing his cystoscope in the same manner. It is well for the safety of the British public that such things appear indigenous to the United States.

Glasgow Obstetrical Society.

The Honorary President of the Glasgow Obstetrical Society, Dr. Howard Kelly of Baltimore, is expected to deliver his presidential address on "The History of Appendicitis in Great Britain," at the Faculty Hall, Glasgow, on 17th June. We have no doubt that Dr. Kelly will receive a warm welcome from the members of the Society, who must feel honoured by his kindness in crossing the Atlantic to give this address. We understand that on the following day there is to be a joint meeting with the Edinburgh Obstetrical Society, which will probably be held also in Glasgow, at which Dr. Kelly will inaugurate a discussion on some more strictly gynæcological subject.

ORIGINAL COMMUNICATIONS.

NOTES ON SPAIN AND ON THE INTERNATIONAL MEDICAL CONGRESS AT MADRID, 1903.

By W. ALLAN JAMIESON, M.D., F.R.C.P.Ed., *Lecturer on Diseases of the Skin, University of Edinburgh, etc.*

HAVING decided to take part in the Fourteenth International Medical Congress, the first question was the selection of a route. That viâ Gibraltar alone involved no retracing one's steps over identical ground, while by it the tedious journey by land to the south was avoided, and even to average sailors the prospect of four days at sea was not alarming. The constant succession of storms which have made this year a record one was bound to end or at least to intermit, and the hope was no false one which Dr. Affleck and I entertained that our voyage would prove auspicious. Hence our passage in the P. & O. S.S. *Rome* turned out almost ideal. The slight swell in the bay failed to affect our equanimity, and that left behind, sailing along the coast of Portugal, resembled more steaming over an inland sea than the northern Atlantic ocean. As we neared the Rock the stillness of the water became greater, so that we were scarcely conscious of a difference when we dropped our anchor at 6 A.M., on the morning of the 7th May, within the shelter of the new mole. A heavy black cloud hung over the signal station and obscured it, though this was partially dissipated as the morning advanced. We found the town crowded with a throng of sight-seers, and in the hands of the decorators, in active preparation for the King's visit next day. The hotels were full to overflowing, so, after a hurried glance at the market—always interesting from the variety of strange fish, the abundance of fruits, and the motley character of its frequenters—we hastened to cross to Algeciras, familiar through Dr. Macgregor's letters.

There we were fortunate enough to meet Mr. Morrison, the ever-courteous director of the railway to Ronda and Bobadilla, who provided us with the coupons necessary to obtain the reduction in fares accorded to congressists, and franking us to Madrid. The track to Ronda traverses in its ascent a very diversified and lovely country, but evening had set in more than half an hour before our arrival there, rendering the final sharp curves invisible. We had telegraphed from Gibraltar, but the Station Hotel was not prepared for such an influx, its eight rooms having to accommodate at least twenty-seven people, hence it was perhaps not extraordinary that the ramshackle, somewhat procrustean bedstead, improvised in the waiting-room, yielded to the light weight of one of our number, so that his slumbers, if any, were hardly the most refreshing. Rising with the dawn, we hastened to the Alameda gardens, where, at their farther side, a scene of the most remarkable splendour burst with startling suddenness on our view. We found ourselves on the very brink of a precipice many hundred feet in depth, which descends sheer down, and over which the bodies of the wretched horses killed in the bull-fights, held from time to time in the town, are hurled, to be disposed of by birds of prey. Here we surveyed a vast prospect of indescribable beauty, ascending from the old town clinging to the side of the brawling stream at the bottom to the bare mountains which rose like battlements at the top. Seen with the morning light shining on it brilliantly from behind us, it had a grandeur which could hardly be surpassed anywhere. The other sight of Ronda, the gorge spanned by the quaint and picturesque old bridge, is nearly as impressive, if less extensive.

On our journey of eight hours from Ronda to Granada we experienced for the first time the aggravating slowness of travelling in Spain. Seventy-seven miles in that space of time is but slow progress, while the heat, though every available window was widely open, was at times oppressive. A fellow-traveller proved to be a Spanish doctor going to the Congress, who, speaking French fluently, freely gave us much valuable information.

Learning that the visit to the General Hospital was paid at 8 A.M., we started on foot in good time, passing on the way the gardens of the University, and paused for a few minutes to inhale the perfume from the numerous lilac trees, whose plentiful clusters of blossom exhaled a delightful odour. The hospital is built round a court or *patio* constituting a quadrangle, and there are three tiers of wards, most of which open on to the court, a wide stone veranda intervening. Ventilation is from one side only, and while there was no marked over-crowding, yet the peculiar oppressive and repulsive stench which pervaded all made our stroll not the most pleasant. Several of the students accompanied us, but none knew any French, and our meagre acquaintance with Spanish rendered interchange of views, to say the least, difficult. At length we came upon Dr. De Castro, Professor of Clinical Medicine, who, though still young, has published in conjunction with others a treatise on medicine in two octavo volumes, and has also translated works from other languages. He is one of the editors of the *Gaceta Medica de Granada*, a fortnightly periodical which has just reached its majority. He courteously conducted us over the wards, and showed us the medical school. In the physiology class-room there were hung up a number of original drawings by Ramon y Cajal of nerve-cells and the inosculating fibres. One part of the eye wards was glazed with blue glass, shedding a modified light, which seems to be regarded in Spain as appropriate to ophthalmic patients, for we met the same arrangement again at Madrid. Adjoining is the splendid church of S. Juan de Dios, with a private entrance into a gallery at the west end for hospital inmates. Vespers were proceeding, and the sweet music from a well-played organ and highly-trained choir tempted us to linger, but we felt that we must not delay too long, and regretfully departed. Lepers are accommodated in a special hospital outside the walls, and no cutaneous diseases were seen. One patient alone, suffering from chronic dysentery, manifested, it is true, the melanotic tint of wasting disease in its most intense form.

The situation and the associations of Granada constitute much of its undoubted charm, while the pure bracing air which tempers its heat in spring renders it a very suitable residence for one habituated to the climate of Scotland. Yet one remarked—and this applies to every place in Spain which we visited—how frequent coughs were. It may be that the extreme dryness of the atmosphere parches the throat, while the sudden chilliness which immediately succeeds sunset favours the onset of catarrhal conditions. Never, it appeared, did the full moon show so sharp and clear as seen from the Alameda at Granada. An eclipse occurred while we were there, but, fatigued with sight-seeing, one shrank from sitting up till midnight to watch the shadow steal over the lunar surface. On Sunday, at the renowned cathedral, we witnessed the elaborate ritual with which the Church of Rome celebrates Easter. The aged archbishop, heavy, his countenance of an almost orange yellow, and slowly and feebly pacing the aisles by the aid and support of two stalwart priests, blessing the thronging congregation as he passed, was an impressive sight. The four days we had devoted to the city proved much too short, and we left it for Seville with regret.

We arrived at Seville to find it joyous and bright. Lent over, the processions and ceremonies of Easter done with, the inhabitants looked forward to their annual Feria for three days of frivolity. Gloom was forgotten, the black mantilla gave place to the creamy white, and flowers and gay colours everywhere prevailed. In luck in having an introduction to one who had made Seville a home for many years, and thus under skilful guidance and experiencing unwearied kindness, we spent a week in circumstances of the most fortunate character. We were disappointed to find that all the hospitals were at such distances as not to be easily got at, hence we did not inspect any. One of our first visits was to the tobacco factory, where cigarettes and cigars are turned out by the million by the four thousand five hundred women constantly employed. It is said that the very pure weed used provides a harmless smoke, yet it must be added that some experienced in its consumption threw doubts on the quality; but, be that as it may, one gazed with wonder at the deftness with which the women plied their task. Mechanically, almost without even a glance, the exact quantity was gauged, and each cigarette emerged from their fingers an identical counterpart of its fellows. Those engaged are selected from the relatives of existing operatives, and seldom is an outsider admitted within the close fraternity, while their characters are subjected to rigid scrutiny. Searchers are, however, a necessity, as all the women smoke when they have a chance, or would secrete specimens for their friends, so every one is examined prior to leaving. There are two relays daily. We saw numerous babies there and young children, and learned that it is not uncommon for births to occur at the factory. The building is a huge one, originally erected for a government monopoly, when many more hands were kept at work, but it is now the property of a private company. Like many other former sources of revenue, Spain has alienated this for the sake of a sum in hand. In the Paseo, or Hyde Park of the city, a broad avenue several miles in length, we saw much of the beauty and fashion taking the air in carriages and vehicles of all descriptions. There were many pretty faces among the young ladies, but excessive *embonpoint* appears early to overtake them, and with it much of their charm vanished, though their clear, piercing black eyes retained their brilliancy and sparkle.

During the fair all the better classes occupy, at least in the daytime, wooden houses or canvas huts, often handsomely furnished, and decorated with pictures and flowering plants, and sometimes consisting of several apartments. The fronts are open to view, and here they receive their friends and hold impromptu concerts and dances at night, the effect of the many-coloured lamps being quaint and pretty. It is the yearly marriage market for the young girls, where they have unwonted liberty. The artists had effectively reproduced an ancient Spanish hostelry, and had hung it with queer and even gruesome sketches. In the courtyard roamed fowls, on the roof pigeons clustered, and it thoroughly reminded one of the famous inn in the opening chapters of *Don Quixote*, where mine host dubbed him a knight. We had the advantage of being conducted over it by a well-known rising Spanish painter, who explained all its details to us with grave courtesy. The gipsies had a settlement to themselves, and woe betide any luckless wight who ventured down its street; he was promptly laid hold on, and efforts not wholly gentle were made to drag him to one of their fortune-telling booths, for on this occasion exceptional licence is permitted them.

Since great part of the railway journey from Seville to Madrid is spent at night, one sees only a portion of the country. This is in the main bare, but an oasis of great fertility, well wooded with trees of considerable age, breaks pleasantly the monotony of the route. On arrival we were at once taken charge of by an official of the Congress, distinguished by a red band on his arm, and conducted to the office of the *Bureau des Logements*, where, on paying the balance of our stipulated sum for board and lodging, we were informed where we were to stay, and given the necessary coupons for ten days. The first covered four days, and to it was attached a proviso that any unused coupons would be repaid on presentation; the rest were for single days. My rooms were in a very second-rate fonda conveniently near the Puerta del Sol, the centre of business and locomotion. It proved to be clean and the food palatable, while the landlord was a Frenchman. We were conveyed to our destination at the expense of the bureau, and were furnished with a coupon to take us back to the station on our departure, but this did not turn out available. The few good hotels were more than full, and those who had not made arrangements in some way before reaching Madrid fared badly.

The offices of the Congress were at the National Library and Museum, more than a mile from the Puerta del Sol, but readily reached by electric tram, which, it may be remarked, travelled more slowly than the Edinburgh cable, and in places there were quite frequently blocks of several cars in row, waiting a chance to proceed. We were informed that tickets of admission and programmes would be ready on Wednesday the 22nd, at 3 P.M. Thither we hied punctually, to find a considerable crowd of all nationalities assembled, our German confrères being specially to the front. Compartments were set aside for congressists from Great Britain, her Colonies, and the United States of America, but were mere waiting-rooms, separated by flimsy partitions, which in some instances yielded to the pressure of the crowd. The space allotted for issuing the tickets was a narrow cul-de-sac, capable of holding sixty people possibly, but soon crammed with a surging and pushing mass, among which were some ladies. The entrance to the trap was not difficult, but the exit, after obtaining what we wanted, was a squeeze and no mistake. Once at the counter one had to wait with patience, for the clerks, some of whom spoke English, took matters very easily, and would not be hurried. Simple members were distinguished by an oval gilt badge, very neatly engraved with the arms of Spain, and lettering. Delegates received either a silver badge set in a rosette of the national colours, or a gilt one similarly mounted. A Frenchman loudly demanded a delegate's badge, to which the clerk did not seem to think him entitled; there was vociferation, gesticulation, and denunciation on the part of the Frenchman, but the official listened with grave indifference, and won in the end, for the Frenchman departed, grumbling, but without the coveted badge. Each member received an invitation from the King to a reception in the Palace on the Friday, and to a garden party on the 29th, the day before the Congress closed.

The formal opening took place on Thursday the 23rd, in the Theatre Royal, a vast and very handsome building between the Palace and the centre of the city. We went very early, yet found several hundreds assembled already in the vestibule. The doors were opened at two, and with but little crushing we found ourselves in the amphitheatre, and secured seats near the front and just under the royal box. By degrees the space filled, and soon not only was every seat occupied, but the central passage was choke-full, so that those who had a right to places on the platform experienced great trouble in forcing their way through; indeed, a representative from the United States in uniform never got there at all, and thus failed to speak for his country during the addresses at the beginning. The stage was handsomely screened off, and at the back hung the arms of Spain emblazoned on a huge coloured cloth, and surmounted by the crown. The sides were clothed with ancient tapestries illustrating deeds of the country by sea and land.

When filled, shortly before three, the house presented a brilliant aspect. Many ladies and some officers occupied the boxes and upper circles, while the handsome decorations were displayed by the electric light. A few minutes after three, the King, in a dark uniform, wearing several orders and with a rose-coloured ribbon across his breast, entered the royal box, accompanied by Queen Christina, the Princess of the Asturias, and another lady. The Queen was plainly dressed in black, and her sole ornament was the badge of the Congress in gold. The King bore himself well, and listened with close and marked attention to the addresses and speeches. Slight, though well grown for his age, he has a gentle and pleasant expression, and if one may augur anything, it is the promise of a wise and judicious ruler, for which he has been carefully trained by one of the most devoted and best of mothers. An address by the president, Don Julian Calleja, was read in Spanish, but copies with a French version had been circulated among the company. After respectfully and heartily greeting the King and Queen, and thanking them for their presence and patronage, he then offered a cordial welcome to the members from foreign lands and to his fellow-countrymen there assembled. He next alluded to the progress in various branches of medicine, surgery, and hygiene. We may quote his peroration:—"We have experienced doubts, fears, and much inquietude lest this Congress should fall below the brilliant level attained by preceding ones; but in the presence of so many illustrious persons, both foreign and national, there can be no hesitation in believing its success assured. To render the minds of the Spanish congressists perfectly tranquil and content, they only need to know that when you, learned strangers, return home, you will carry back with you a pleasant recollection of this noble nation, as fully enamoured of hospitality and courtesy as of peace and progress; and that when you have returned to the bosom of your families, and talk of the events of this tour, you will remember with satisfaction that our feelings of brotherhood, of esteem, and of regard, equal in their intensity at least, the bright sun which lights up so splendidly our green valleys and precipitous mountains, the majestic and very rich architecture contained in Toledo, Seville, Granada, the Escurial, Leon and many other cities besides, and the precious treasure of jewels we possess in our art galleries of painting and sculpture, as well as in the kindly domain of literature."

A series of speeches by the various delegates followed; the opening one by Professor Leyden was rather long and a little prosy, but the rest were brief. The president again addressed the sovereign, and declared the Congress open. The King rose, bowed repeatedly to the audience, and retired, and the Queen followed. Great cheering and enthusiasm prevailed. Just as the King rose a somewhat startling episode occurred, causing him slightly to wince and then to smile. A dull explosion was heard, and a bright light gleamed from the upper gallery, accompanied by some smoke. Visions of bombs and assassins passed through our minds, but this turned out to have been simply a strong magnesium flashlight employed to obtain a photograph of the opening ceremony at its acme.

The first session of the Section of Dermatology was held on Friday morning, at 9.30 A.M., under the presidency of Unna. A somewhat desultory discussion on the treatment of blennorrhagia was the first item. The section broke up early, and a later meeting, when a series of demonstrations by Unna and others on the screen by the limelight, I missed seeing owing to defective notification. A reception by the King at the Palace was held that afternoon, and largely attended. Six members from Great Britain were presented, including Sir Thomas Barlow, Sir William Broadbent, Dr. Pavy, Sir Dyce Duckworth, and Professor Murdoch Cameron from Glasgow. Owing to the credentials of the Edinburgh contingent—only five in all—not having arrived, none were accorded that honour. An opportunity was subsequently afforded of wandering through some parts of the vast building, and one long corridor was hung for the occasion with a variety of wonderful Gobelins tapestries.

One afternoon was spent in a prolonged visit to the General Hospital, part of which dates from about 1400, but much is of a far more recent date. It is really a large square with a garden in the centre. There is space for 1500 patients, it being the largest hospital in Spain. Some wards are of great size. Two arranged parallel to each other contained 120 beds; though there was through ventilation, the excessive number of inmates taxed this to the utmost. The beds are very much higher than those we are accustomed to; the mattresses filled with maize leaves and placed on springs. A sickly odour proceeding from the patients pervaded the wards. In the eye wards, while two of the six or eight panes in each window were of white glass, the others were of blue. Originally we were told the glass in these wards was red, but latterly blue has been substituted, much to the comfort if not to the safety of the sufferers. There was a very complete service of baths of all kinds; the ascending douche had such force and calibre, that one could almost imagine the victim subjected to it dancing like an egg on the column of water. The kitchen, which seemed small for so many individuals, had an economical arrangement. The cooking apparatus was in the centre, so that the attendants could move freely round. In the storerooms we saw some unfamiliar grains and seeds, such as the chickpea, which seems largely partaken of. There were a few paying wards where patients were boarded for two and a half pesetas a day, about eighteen pence. There semi-privacy was aimed at by placing curtains round the beds. The phthisis cases were not apparently being treated by the open-air method, though they perambulated the corridors and verandas. Too many were associated together in one ward for mutual advantage; the outlook was not a hopeful one.

The Section of Dermatology spent Monday forenoon in the Hospital of San Juan de Dios, to which Dr. Juan de Azua, the secretary, is physician. It is a scattered one-storey building in the outskirts of the city, and not far from the bull-ring. There are fifty-five beds for venereal and cutaneous cases. What was pronounced multiple rodent ulcer in a man of 30 showed a few white scars on the right temple, where the lesions had been scraped out and dressed with solution of chlorate of potash. On the left cheek there was a crescentic erosion, and a deeper ulcer on the same temple. These had not been influenced for good by similar measures. The diagnosis appeared to us, seeing it only once, as a little dubious. A young man, who looked healthy, presented an eruption which in localisation and many of its features recalled Kaposi's idiopathic multiple sarcoma. The fingers were swollen, and the skin exhibited purplish indurations on their dorsa. On the ankles were purplish nodules scattered over the integument, and present also on the soles. There was no pigmentation, and the case a good deal resembled that published by Sequeira in the *British Journal of Dermatology* for 1901. A boy of 7 showed well-marked xeroderma pigmentosum. The hue was very dark, no doubt owing to nationality. There was no conjunctivitis nor ectropion, nor any telangiectases, but there were several warts, one quite a horn springing from the tip of the nose, and half an inch long. An epitheliomatous vegetating mass the size of half a marble grew at the left side of the mouth. He had four healthy brothers, but one had succumbed to the same disease. A boy of 12 exhibited peripheral lesions traceable to syringomyelia, clubbing of the fingers, with destruction of the distal phalanges. He had also antero-posterior curvature of the spine in the dorsal region. It was impossible to ascertain accurately the state of sensibility.

One of the most singular cases was that of a man of 40, who looked ill. He had suffered for many years from a disease affecting more particularly the trunk, limbs, and genitals. The earliest lesions visible—those on the penis were the most discrete

—were solid pale papules, with a smooth surface, and about the size of a small shot. On many parts, notably on the front of the chest and thighs, these had become closely aggregated, and were associated with much dark pigmentation, scaliness, and some epidermic accumulation. There were no papules on the face, which, however, was dry and scurfy, nor on the palms, which were slightly moist, and showed a few arsenical corns. On the back the papules were less in evidence; there were greasy scales, and there the aspect certainly assimilated that of psorospermosis follicularis, but there were no rank vegetations in the inguinal folds. It was indeed impossible, with the cursory inspection which time permitted, to say whether it was that or a lichen of a severe wide-spread and chronic type, altered by arsenic administered for a considerable period.

A quite unique case was one to which Professor Azua particularly drew our attention, and denominated by him "Necrobioses cutanées primitives multiples par stases capillaires." The disease here was a congenital one, and its cause seemed to depend on embryogenic malformations of the texture of the walls of the vessels, principally of the capillaries. The case formed the subject of a communication to the Section, and a copy of the paper dealing with it was circulated among the members, giving a most exhaustive account of it, and admirably illustrated with coloured plates and engravings of the microscopic appearances. In preparing it, Professor Azua had the co-operation of Dr. Sala y Pons, assistant to Dr. Ramon y Cajal. The patient was a man of 27, and it is interesting to note that apparently both his parents died of cardiac disease. Over his whole body were distributed reticulate violaceous mottlings, not very unlike those which appear when the body of a healthy active individual is exposed for a time to a cold atmosphere. Here these were constant, though they altered somewhat in accordance with position and temperature. When the upright position was maintained for a time, œdema complicated the mottling. Under these circumstances, too, the veins of the extremities became turgescent to such an extent as to threaten to burst. The hue of the marbling varied from a bright reddish purple to a violet, becoming nearly black. On the limbs there occurred a series of necroses, the slough being dry and separating slowly, the excavation healing with extreme slowness. The temperature in the axilla was normal, but the hands and feet were habitually cold and clammy. Sections of the skin showed the rete Malpighii thinned, with marked alterations in the structure of the cells themselves, which went on to necrobiosis. The endothelium of the vessels was thicker than is usual, but the walls were reduced and the adventitia imperfect. The case approximates to a condition of generalised asphyxia, a widely-diffused Raynaud's disease.

A middle-aged woman, with a peculiar purplish or lilac thickening and nodulation of the skin of the face, chiefly on the right side, was offered for diagnosis. On the strength of a globular swelling under the eye, which had a yellow tint, increased when the diascope was applied, the idea of a xanthoma was expressed by the hospital physicians, but this was rejected, and it was relegated to the sarkoids of Bœck and others.

There were several cases of leprosy, both of the macular and tuberculous type. In one woman from Cordova the eyebrows were already denuded of hair, and the tubercles fairly large. A girl showed what has been described as dermatitis vegetans. Hallopeau, who first drew attention to it, was present, and held to his view that it is allied to pemphigus vegetans. A cast of this case, taken at an earlier stage, was labelled dermatitis herpetiformis, and when taken there had assuredly been bullæ, but now the back, sides of the face, and some other parts, showed a skin red and thickened, and with minute abscesses embedded in it. The condition manifested the obstinacy which is so marked a characteristic of this still ill-understood disease.

Favus is very common, and a cure is said to be accomplished by epilation in four or five months, and Pellizari of Parma supported this statement, Unna explaining it by saying that there are several varieties of the achorion, and these differ in virulence. The X-rays do not seem to have been tried yet in Madrid, and great interest was exhibited when the excellent results obtained in Edinburgh by their means were quoted by me, particulars being eagerly demanded. Time pressed, so a fine museum of casts, to the establishment of which the late Professor Olavide had largely contributed, had to be rather too hurriedly inspected. Before departing, an acceptable and well-served lunch was partaken of.

The subject for discussion on Tuesday the 28th, Dr. Ravogli of Cincinnati occupying the chair, was the treatment of pruritus, introduced by Professor Azua. His observations showed a thorough grasp of the subject, and even the application of rays of high frequency was referred to as a useful adjunct to the methods previously in use. This latter was corroborated by Dr. Radcliffe Crocker of London, who cited an instance of pruritus ani of long duration, which had entirely, and apparently permanently, disappeared under their employment. Dr. Azua had not heard of the value of the X-rays in abolishing the itchiness, while it causes the absorption of the tumours in mycosis fungoides, in which he had found all remedies ineffective. It afforded me, therefore, great pleasure to quote my recent encouraging experience with them. Von During of Constantinople emphasised the influence of climate in the production of pruritus, as shown by the prevalence of the prurigo of Hebra in the east as compared with the west of Europe. At Constantinople this complaint exceeds in frequency even eczema and psoriasis, and is best controlled by an almost exclusive vegetarian diet, combined with the avoidance of local irritation, as the wearing of flannel. As is well known, prurigo is one of the rarest diseases here.

Dr. Allen of New York read a paper on the X-rays in cutaneous therapeutics, stating that he found them chiefly useful in lupus vulgaris, rodent ulcer, sycosis, acne, and in the parasitic diseases of the scalp. Though of occasional utility in hypertrichosis, he confessed he employed them but seldom, and with misgivings. Their value in lupus and favus I endorsed, and pointed out that the suggestion of Norman Walker to paint the patch with pure carbolic acid occasionally before exposure, led in suitable cases to distinctly better results. Crocker advised drilling out the residual nodules with acid nitrate of mercury.

The members of the Section were entertained at dinner in the Café Fornos by Drs. Azua, Castelo, Olavide, Pardo, Suárez de Mendoza, Taboada, and Guillen. Covers were laid for thirty, including four ladies. A most *recherché* entertainment was provided, and a thoroughly enjoyable evening spent. The honour was accorded me of proposing the health of our generous hosts, and this was followed by speeches from many members, who spoke each in his own language, so that we had specimens of Turkish, Arabic, Russian, Italian, etc. A translation was usually called for, hence it occurred that Madame Tarnowski rendered her husband's Russian into French, and Madame Ravogli replied for the ladies.

On Wednesday the 29th, Professor von During was chairman, and reports on purpura were read by myself and for Török of Buda-Pesth, who was not present. Either the subject selected was too abstruse, or we had exhausted all that could be said, whatever was the cause, there was no discussion. This was followed by a paper by Hollænder on the treatment of lupus erythematosus by quinine and tincture of iodine. He apparently assumed that he had the merit of suggesting this method. In criticising it, it gave much satisfaction to claim for Payne of London the priority as regards quinine, while confirming Hollænder's statements with respect to its efficacy. Crocker praised salicin, and noted the differences between the diffuse and acute, and the fixed or disc-like forms, which latter are less amenable either to quinine or salicin. Allen of New York had had good results in the fixed form, from what he called gentle erasion from within outwards. He scrapes the margins with a very fine spoon beneath the scales, combined in some instances with painting with aromatic sulphuric acid. Hollænder in his reply rather haltingly admitted Payne's priority, but urged the associated use of iodine locally as a drying remedy, which also favoured desquamation.

Under the guidance of Dr. Taylor Grant of Edinburgh, we visited the Vaccine Institute and the new Municipal Laboratory. Both were admirable, the latter a splendid building just completed, fitted up in the most perfect style, and we should say hardly excelled anywhere. Those in charge were not only most capable, but highly enthusiastic.

In the afternoon we went to the party given by the King in the gardens behind the Palace, and seldom open to the public. The day, though threatening, kept fine, and a large assemblage thronged the paths. The King and Queen mixed freely with their guests, and conversed frankly with many.

Anxious to avoid the mad rush northwards on the 30th, after the formal closing of the Congress, we had engaged sleeping accommodation in the Sud Express from Madrid before leaving home, and started on the evening of the 29th. We had thus a comfortable and uneventful journey, and when Dr. Affleck and I dissolved partnership at the Caledonian Station on Saturday night, we agreed that our visit to Spain had been a great success, and for us at least the remembrance as agreeable as Calleja himself could desire.

PUBLIC HEALTH ADMINISTRATION IN FIFE: A TEN YEARS' RETROSPECT.

By T. G. Nasmyth, M.D., D.Sc., *Medical Officer of Health, Fife, Kinross, and Clackmannanshires.*

(*Concluded from page* 396.)

Enteric Fever.—There were notified, from 1892 to 1901, 705 cases of enteric, giving a yearly mean of seventy cases. The largest number was ninety-nine in 1899, and the lowest thirty-nine in 1898.

Investigations as to the origin and spread of enteric are probably the most interesting that the Medical Officer of Health has to make. Sometimes the cause is very apparent; at other times it is obscure, and by no means easy to elucidate. It may be of interest to narrate the facts regarding one or two outbreaks where the causal origin was difficult to discover, and where, by processes of exclusion, a reasonable hypothesis of the origin was arrived at ("Report," 1895, p. 36).

The greatest number of cases occurred in the months of September, and next in October. According to ages, the greatest number occurred under 10 years, and next to this, from 10 to 15.

In the following pages, accounts are given of the outbreaks of enteric, which illustrate the difficulty of tracing out the causal origin and also the different recognised channels of infection—air, water, milk, and food.

Epidemic at Milton.—Milton is a two-row colliery village. The water supply was from wells situated in too close proximity to sources of possible pollution of the ordinary kind—drains, ashpits, etc. The water of these wells was frequently examined, as it was considered suspicious. The wells were puddled, and protected, as far as possible, against leakages from the surface and through the sides. The drains were surface channels, discharging into a ditch which flowed through a meadow at the east end of the rows, and past the dairy which supplied milk to the houses. In summer this ditch was foul and offensive, and was much too close to the dairy. The ashpits were large and unroofed, and stood in the open space between the rows.

The first case was that of Mrs. P., who afterwards died. Another case occurred in a small shop where biscuits, ginger-beer, etc., were sold, and this was of significance, seeing so many children were subsequently affected. This outbreak took place in September and October, twenty-six cases having occurred. The water of the wells was again examined, and the two analyses taken in May and October may be compared:—

TABLE III.

	Dairy Well.		Pump Well.	
	May.	October.	May.	October.
Free ammonia	0·0028	0·0029	0·0003	0·0017
Albuminoid ammonia . .	0·0062	0·0071	0·0034	0·0056
Carbonate of lime	5·60	11·90	7·81	11·90
Chlorine	1·12	1·96	1·68	2·52
Nitrogen as nitrates . . .	0·515	...	0·538	0·515
Hardness	5½°	12°	7¾°	12°

There was nothing very positive in the chemical analysis, but *Bacilli coli* were found in one of the waters. Notices were posted up warning the inhabitants not to use the well waters; and pure water was carted daily to the houses. It should have been stated that after the demolition of an ashpit, which was done in dry weather, there was a considerable increase of cases, which pointed to the dissemination of infection by dust.

Milk infection.—A complaint was made by the sanitary officials in Dunfermline burgh that an epidemic of enteric there was attributable to the milk supply from a dairy farm in the county. This dairy farm is just outside the boundaries of the burgh, and was not registered in accordance with the Milkshops Order and Dairy Act. When I visited the farm, there was a case of enteric there, but this case had not preceded the cases in the burgh. It was alleged, however, that there had been previous cases at the dairy in question; but this could not be verified. At the dairy, however, there was quite a catalogue of insanitary conditions, any of which might have led to enteric fever. The drainage of the house, of the byres, and of the premises generally, was of the most primitive nature, the outfalls being open ditches close to both ends of the house in which the case of fever was, and close to the milk-house. The milk-house was in close communication with the dwelling-house. The washing-house was used both for domestic and dairy purposes—a boiler common to both uses. The byres were very dirty; and adjacent to the cattle court, which was in a very foul condition, the conditions were so bad that I reported to the District Committee that the premises were nuisances under sec. 16 of the Public Health Act.

Water infection.—A small outbreak of typhoid early in September occurred, under circumstances of interest, on a farm in the vicinity of Cupar. There were, in all, fourteen persons involved, and the notification of the cases occurred in September and October.

The first case was a nursery-maid in the farmhouse, the others were inmates of the cottar-houses. The outbreak, judged by the first notifications, pointed to an almost simultaneous infection.

The usual circumstances looked for in outbreaks of enteric were absent, as the general sanitary conditions, with the exception of one, were very good. The exception was the water supply. For the farmhouse and the cottar-houses there were two supplies —one which will be referred to as the old, and the other the new.

The new supply recently introduced is spring water, derived from a source above suspicion, and led to the houses in close iron pipes. The water tastes strongly of tar, and for this reason was not used for drinking purposes by the inhabitants of the houses, who preferred to use the old supply. All the people had the same milk supply, but there was nothing to incriminate it.

The old water supply was closely inquired into, and on analysis I found the sample was fairly good in colour, and with little suspended matter. On distillation it yielded, per gallon, a little free ammonia and 0·003 albuminoid ammonia. Chlorine yielded 1·2 gr. per gallon. Nitrites were absent, and nitrates were in moderate quantity. Hardness was 11°, Clarke's scale.

There was not much information to be derived from the examination. Bacteria were present to the amount of 1100 c.c.

Survey of water source.—The water is derived from a spring in a grass field, and runs in a field drain to the public road leading to Dundee. At this point a drinking-trough at the side of the road is supplied from the drain referred to; the overflow from the drinking-trough runs into a conduit, which opens into an open ditch passing through a wood for about 150 yards. The ditch was very dirty from dead and decaying vegetable matter. Human excreta were evident on the side of the ditch. The ditch leads to a covered conduit, which runs for about half-a-mile, and then the water again emerges to the surface, and runs in an open ditch below another public highway. From this ditch the water is conducted by a field drain to a large built tank.

From the tank the water is forced by a hydraulic ram to the houses which it supplies. The first sample analysed was taken from a tap at the termination of the supply pipe. After the old water supply was stopped, the cases dropped off; but, unfortunately, the water was again turned on (surreptitiously), and other cases occurred. After this the water was completely cut off, and no more cases occurred.

Enteric at Dairsie Station.—Dairsie Station is situated about half-a-mile to the eastward of Dairsie Mains, and about 200 yards from the tank which supplies water for the hydraulic ram. There is no communication between the station and the farm, either as regards milk or water supply, but occasionally the railway surfacemen fill their flasks with the water at Dairsie Mains cottar-houses. On the 18th September I heard of various cases of enteric—one in Cupar district, one in St. Andrews district, and one in Dundee—and on inquiry the Sanitary Inspectors found that all the cases had been employed at Dairsie Station. Previous to hearing of these cases, a case had occurred in a village in St. Andrews district, and the man—a carter—had been employed at Dairsie Station about the end of August.

I visited Dairsie Station on the 18th September, and ascertained the following particulars:—

J. B., a carter, was employed at the station in the end of August; he left ill, and had since died.

W. B., signalman, was engaged in the station signalbox from 12th to 17th September, when he left ill.

P. C., signalman, engaged at same signalbox from 19th August to 31st September, when he left ill.

Richard Morrison, surfaceman, was employed during the middle of August, and fell ill on the 31st, and did not resume work.

All these men drank water from a well situated on the north side of the line, and to the east of the station. They were not known to drink any other water nor any milk.

The signalbox had nothing wrong with it to account for the illness of the men. The surfaceman had not been in the signalbox at all.

The urinal and w.-c. are to the west side of the station, about 20 yards from the well. The discharge pipe from the urinal and w.-c. opens on to the side of the road leading to the station. The surface of the ground slopes from the station well to the point of discharge of the soil pipe referred to, so that on the surface the flow would be from rather than to the well. To ascertain how this might be altered by the dip of the strata below the surface, I had a pit dug, and found that below the surface was a stiff boulder clay, which would prevent any possibility of soakage from the w.-c. gaining entrance. Pollutions from the railway, however, might flow into the well between the clay and the surface soil.

The spill water from the pump ran back to the well, and this is a dangerous defect at all times; but more so in this case, as fishers from the Eden are in the habit of washing their wading or fishing boots at this pump.

There was another probable source of contamination of the well, namely, the discharge from the urinals and w.-c.'s in the railway carriages. These, after being used, are emptied on to the permanent way, and it is, of course, highly possible that typhoid excreta might be discharged in this way. The distance between the nearest line of rails and the well is only 35 ft., so that, quite readily, pollutions might find their way into the well. In August there were very heavy rainfalls, greatly facilitating pollutions from this and other sources. There is no small danger from the pollution of water supplies close to railways in this way, and, considering the enormous human traffic along railways, it is one which should be taken into account; but, so far as I am aware, it has never been before.

The water from this well, on analysis, showed that in grains per gallon there was—

Ammonia	0·004
Albuminoid ammonia	0·006
Chlorine	1·26
Nitrates	0·39
Nitrites	None
Hardness	17°
Carbonate of lime, etc.	17·08

The report of the analyst was that this water is an undesirable one for drinking and domestic purposes.

A second analysis was got by the railway company, which was of a favourable nature. The analyst, however, expressed his opinion that it was almost impossible that disease germs could gain access to the well. I have pointed out two ways by which it was not only possible, but highly probable, disease germs did gain access to the well.

The well is about 15 ft. deep, and about 6 ft. of water usually stands in it. From the bottom of the well to the level of the railway the depth is 20 ft. As already stated, the well is only 35 ft. distant from the railway, and surely this distance, with such a fall, is not an impossible obstacle to pollutions from the railway washing into the well. It must not be overlooked that a water may be specifically contaminated with the germs of enteric or cholera, and show very little organic pollution by chemical tests. The analyses of this well were very good examples, as neither the one nor the other was decidedly unfavourable, and without doubt the water from this well caused the outbreak.

Immunity against enteric.—It is within the knowledge and experience of every Medical Officer of Health, that the conditions believed to lead to enteric are at all times present in many communities, and the only wonder is that the disease is ever absent.

It is a fact, well recognised by medical men, that newcomers are much more susceptible to attacks of enteric than old residenters. If a stranger comes to a country village, and partakes of the clear, cool draught from its favourite well, he frequently develops enteric.

This individual predisposition is a very important fact in the production of enteric, and the non-liability of those constantly surrounded by conditions well recognised as leading to the disease, points to their acclimatisation against it.

As quoted in Hirsch's work, Petit and Serres found that many of the patients treated by them had only resided in Paris for a short time. This fact was confirmed by Andral and Louis. It was also noted in the hospitals in London, Dundee, and other places. This immunity, apart from its very important practical bearings, is of great scientific interest. On what conditions does it depend? Zymotic diseases like enteric are caused by specific organisms or microbes. Microbes abound in air, water, foods, soils; but, fortunately, most are either harmless or beneficial to humanity in many ways. Hurtful kinds, like that of enteric, can only act under certain favourable conditions, of the individual, and of the environment of the organism and the individual. At this time we will alone refer to the individual, and briefly refer to conditions favourable or unfavourable to the individual in his combat against the typhoid organism.

The individual is protected so far against typhoid by a previous attack; the older he is, the less liable he is to infection, and the sounder his constitution is, the more resistant he is to the attack and against a fatal result; but the latter conditions by no means give him exemption or immunity. Artificial immunity, as is so well known, is conferred against smallpox by vaccination; and on the same principle as this is acquired, do we now seek immunity against such diseases as cholera, tuberculosis, diphtheria, etc.

In the disease, diphtheria, an organism is at work, and frequently kills the individual by the poisonous products it evolves; and the physician now seeks to counteract this poison by means of what is called the antitoxine of diphtheria. This antitoxine also gives immunity to inoculated persons against diphtheria. What the nature of antitoxine is, or how it acts, does not concern us; but what I wish to indicate is this, that in polluted waters some substance is produced, by the action of microbes on organic matter; and by the habitual use of this, through the agency of the water they are contained in, immunity against the enteric organism is conferred on the individual. This immunity or acclimatisation, of course, is not found in the stranger or occasional user of a polluted water, and hence the reason why it is found that he is so often the victim.

What I have stated broadly is capable of a much longer and more scientific explanation. It must be carefully understood that this apparent immunity or acclimatisation is not complete, but is marked enough to indicate a difference in susceptibility in newcomers and old residents. Nor is it to be held that, even to confer partial immunity against an attack of enteric, should "a course" of polluted water be taken. Polluted water is at all times bad, and in drinking it people run many risks beside that of enteric.

Water infection.—Careful examinations of cultivations from the water were made, but with negative results.

Water or milk borne infection.—In the beginning of September an outbreak of enteric occurred, affecting both the burgh of Burntisland and that part of the town outside the royal burgh.

At the beginning of the outbreak it was apparent that there was only one probable cause common to all the cases, namely, the milk supply. The residences of the cases were widely separated, some being in the county and some just outside the burgh.

The water supply was different, at least three separate waters being used. The dairy from which all the cases, save one, got milk was a very good one, well constructed and well managed. No notifiable sickness had occurred amongst any of those concerned with the dairy, and on visiting on the 9th September I found all to be well. The water supply was derived from a spring in a hillside, and was conveyed to the farm in a close iron pipe. The water is normally of excellent quality. To the south side of the hill in which the spring is situated is a large quarry, in which about one hundred men are employed. On examining the hillside in which the spring is situated, I found evidence of most abundant fæcal pollution, and I was informed the quarrymen had been using the wood instead of a latrine. It was thus easy for the spring becoming specifically fouled either by percolation from the surface through open, porous, sandy soil, or by being washed along the surface till it reached the spring, or a small cistern which collects the water before it passes into this gravitation system. The distance from the most recent pollution to the spring was only a few yards, and from the cistern about 10 yards.

I got no history of illness amongst the quarrymen; but a mild case being so often unrecognisable, this was not surprising. The single person who did not use the milk used the impugned water. Five others used the same water, and doubtless were affected directly from it.

The water supply.—As briefly stated, the water is conveyed to the farm in a close iron pipe. Owing to the extension of the quarrying operations, this pipe was lifted and relaid in the month of May. The intake of this pipe is from an iron boiler sunk in the ground, and provided with a close-fitting manhole cover. The tank is fed from a small stone cistern, with a wooden door, under padlock and key. The spring is conveyed to this cistern in a built conduit, coming close to the surface as it reaches the cistern, and being about 10 ft. deep as it reaches the spring in the hillside. There is a considerable slope from the wooded hillside to the stone cistern and iron tank, and the surface is covered with grass along the course of the conduit; but immediately to the west, a few yards distant, the field is stubble, after a crop of corn. The conduit being situated chiefly in the hillside, it is not easy to ascertain the exact distance from the spring to the cistern, but it is under 20 yards. The soil is open and porous, and the water is derived from a sandstone rock, and in ordinary circumstances must be of great purity. In wet weather water runs down from the catchment area on the hillside, and pollutions could most readily reach the spring and the stone cistern by percolation as regards the former, and by percolation and surface flow in the latter.

On my first visit, on 8th September, there were abundant traces both of old and recent fæces, and at the edge of the wood, just above what appeared to be the line of the conduit which conveys the water to the cistern, there were recent fæcal deposits.

Assuming that specifically infected fæces had been deposited in the vicinity of the spring, the distance which the bacilli had to travel was by no means great, either by being carried on the surface or by direct gravitation into the water. In an outbreak of enteric at Houghton-le-Spring, it was shown that the water supply had been polluted by filth which had travelled three-quarters of a mile through a fissure in magnesian limestone. At Lausin, in Switzerland, the specifically polluted water travelled half a mile underground, and led to an extensive outbreak of enteric fever amongst those using it.

How the specific contamination reached the hillside under consideration cannot be determined. No trace of suspicious illness amongst any of the quarrymen could be discovered, but they are a constantly changing body of men, and one may be in the quarry one week and away the next. The contamination may not even have come from one of them, as there is a footpath through the wood traversed for a short cut by those passing that way. It is now recognised that the specific bacillus may live in the soil for a considerable time. From researches made by Dr. Robertson, Sheffield, and others, it was proved that the typhoid organism could live in certain soils for considerable periods.

The rains of spring and autumn and the frosts and snows of winter do not kill them. *Cultures planted at a depth of* 18 *in. came to the surface.* This shows that excreta should be very thoroughly disinfected before they are buried.

The incidence of notifications as to age and time.—The incubation period of enteric varies somewhat from two, three, to twenty-one days. Milk epidemics are characterised by the shortness of the incubation period and by the suddenness of the outbreak. This outbreak, though in great part a milk outbreak, was probably also directly due to water, as about six of the county cases drank the impugned water.

The dates of notifications extended from the 5th of September till the 10th October. The milk supply was stopped on the 10th September. Although the dates of notification were widely separated, infection may have occurred about the same time.

Mortality.—This, so far as the county was concerned, was low. In the hospital one case died; one case treated at home died, after convalescence had been established, from failure of a previously weak heart. There was another fatal case.

Theories regarding the outbreak.—At the outset there was no doubt as to the milk being the vehicle of the infection, and to my mind as little that it was derived from the water supply, taking into consideration the decided signs of fæcal pollution close to the origin of the water supply. There were various wild theories circulating, such as that the outbreak was consequent on blood in the milk; that cows had died at the farm, and had been buried at the dead of night; that various farm-servants had been ill. My inquiries into the latter statements showed no connection between some minor ailments complained of and the outbreak. One of the milkers suffered from a headache for three days in August, but had no other definite symptom which could be interpreted as being due to enteric. Several of the farm-servants certainly became affected contemporaneously with the other cases; but that was, of course, to be expected, as they both drank the milk and the impugned water.

The chemical analysis of the water showed that ammonia was much higher than should have been in what was normally a water of the highest purity. The analyst also satisfied himself that it contained the *B. coli*—pointing to fæcal pollution and to association with the *B. typhosus.*

My own examination of the water led me to think also that it contained the *B. coli.*

Ordinary plate cultivations did not show an excessive amount of ordinary micro-organisms, but inoculations into sterilised milk coagulated it. A micro-organism, actively mobile, was discovered in phenol broth and gelatin cultivations in a drop culture. It produced the characteristic appearances in broth, but I did not get the gas-forming action characteristic of the *B. coli.* On the whole, I think that it was there, and the stained organisms correspond with the descriptions of this organism.

These observations were all made at night, and under much pressure of work, and might have with advantage been more complete; but administrative work overrides scientific research in the work of a Health Officer, as it is presently understood.

It is of much importance, as explanatory of the conveyance of fæcal pollution from the hillside to the spring, that there were more heavy rainfalls during the end of August, and that the summer was characterised by unusually high temperatures, which would favour the growth of bacteria.

Milk outbreak in Thornton village.—The outbreak occurred in the month of March, the first case occurring on 15th March, and within a fortnight there were eleven cases. The houses in which these cases occurred were widely separated; some at the north, some at the south, and some at the east end of the village. The east end of the village is less insanitary than any other part, and is well removed from the sewage ditches; and the other cases were in houses situated on the slopes of the ridge, and thus less under the influence of stagnating sewage.

It was soon recognised that all the cases were getting milk from one dairy in whole or in part. In every case part was got from this particular dairy.

A visit to the dairy and an examination of all the persons at it threw no light on the subject, there being no present, and no history of past, illness. The dairy had some defects still common to many others. There was no separation between the scalding-house for the milk dishes and the domestic washing-house, and there was an untrapped gully in the floor of the scalding-house. There were some other defects, minor so far as the outbreak was concerned. The water supply for the dairy was of two kinds—one excellent, and the other execrable. The former was the water common to the village, a pure gravitation water; the other was derived from a burn which flows past the premises, and into which part of the sewage of Thornton discharges. Sewage from various other places discharges into this burn, but the nearest source is a pipe leading from one of the Thornton sewage ditches. This pipe discharges into the burn on the same side about 300 yards higher up than where the pails were filled for dairy purposes. Water for dairy purposes is of varied meaning and application. It may be only for watering the cows and for boiling their food, when the chance of typhoid bacilli reaching the milk in a potent condition is small. It may, however, be of greater and more dangerous application, such as for the washing of hands just before milking, or it may be for the washing of the milk pails, milk basins, barrels, or tins in an unboiled state, or at such a temperature that the bacilli are still living. It was admitted that this burn water was used for dairy purposes, and that it was carried in pails into the scalding-house. It was stated that water for cleansing the dishes was carried by similar pails from the gravitation supply into the same scalding-house. This being so, how was water in one pail to be recognised and distinguished from another water in a similar pail in a dimly lighted house? How was the carelessness of a servant to be guarded against in such circumstances: was it in accordance with human nature that water would *always* be carried from the gravitation tap at a much longer distance away than the burn? Further, water had to be taken surreptitiously from the tap,—it did not belong to the dairy premises. It is part of the evidence that unboiled water was used for cooling down the milk dishes after they had been scalded. My theory, therefore, was that burn water was knowingly or unknowingly used, and that this was the cause of the outbreak.

It came to our ears, about six weeks after the outbreak, *that a minnow was found in the milk supplied to one person.* The use of this burn water was at once stopped, and gravitation water was thereafter used, and the minor defects at the dairy were remedied. As was to be expected, a few cases occurred afterwards, due to the original contagion.

The question of stopping the milk supply was considered, but the introduction of pure gravitation water, the disinfection of all milk utensils, and the prompt remedying of such defects on the premises as were pointed out, obviated this step.

I am glad the result justified the course taken, as the subsequent cases were all within the incubating period of the disease, with the exception of secondary cases later on. How did the burn become specifically infected was a question of importance? The burn, after its origin in Benarty Hill, passes various houses and hamlets situated on the numerous subsidiary feeders of the Lochty, and receives a quota of sewage from each. The most important pollutions, however, come from Thornton village, where the epidemic occurred, and from the village of Kinglassie, situated on the banks of the Lochty, 4 miles above Thornton. Kinglassie is situated on steep sloping ground, and all slops, sewage, etc., which are not absorbed by the soil, discharge into the Lochty. Now, there was a case of enteric notified from a house in Kinglassie, just about the same time as the Thornton cases; but on full investigation I found that probably the fever developed about the beginning of March, and before that date a child was ill in the same house *with an illness of three weeks' duration.*

The house in which this case occurred is within forty yards of the Lochty burn, and the drainage from it discharges by a pipe direct into the burn. At the door of the house where the typhoid was, there was an untrapped foul gully much complained of, and which possibly led to the outbreak in the house. The typhoid excreta from this house, in part at any rate, was led into the burn, and as the flow of water was rapid, it would not take long for the contagion to reach Lochtyside, where the dairy is situated, and from which all the thirteen cases in Thornton got milk.

DIPHTHERIA.—There were notified 753 cases, from 1892 to 1901. In the first five years there were notified 485, and in the last five years 268 cases, which shows a very large reduction. The largest number of cases were reported in 1894 and the *lowest in* 1901. According to ages, the incidence was—

From 1 to 5,	304	From 10 to 15,	95
From 5 to 10,	219	From 15 to 20,	49

The months of November and October had the most cases, and July and December the fewest. The conditions under which outbreaks occurred varied very widely. In some, marked typical insanitary conditions were absent; and in others, what are certainly predisposing, if not actually existing causes were only too evident. Only a few accounts of typical outbreaks can be referred to, so much space has already been taken up with enteric outbreaks.

Outbreaks of diphtheria occurred in the farmhouse of Kinnaird, near Dairsie. There had been cases in the same house some years before. The meteorological features of the month of March, as observed at the Fife and Kinross Asylum station, were as follows:—The mean barometer reading was 29·385 in.; highest temperature 54°·2, lowest 26°·5. The mean temperature of the month was 40°·9. The wind was mostly in the west. Rain fell on twelve days, and the rainfall was 1·88 in. The weather was spring-like and mild. The farmhouse stands at the back of a hill, and gets little sun in winter and spring. There was a large number of feeding cattle on the farm. A calf had recently died from "scour," and a cow from tuberculosis. Another cow was suffering from this disease. There was only one cat, and it was healthy. No disease known to exist amongst the fowls. One of the cows was nursing a calf, but before this had supplied milk to the family. There were ulcers on the teats. From this ulcer I made inoculations into agar jelly, in order to cultivate any microbe present. At a temperature of about 90° F., a copious growth soon appeared, and on making microscopic preparations from this a bacillus was found, resembling that associated with diphtheria. I sent a specimen of this to Professor Klein of London, who at first was inclined to think it was the identical organism, but ultimately it was found not to be so. This brief statement shows this, that it is of the greatest importance to study the causation of such diseases as diphtheria and typhoid, even although the results are negative. Every properly equipped Public Health Department should have a laboratory and the necessary apparatus for such investigations.

In another outbreak in a small village the main facts were:—

1. The first cases all occurred either amongst children attending Pitlessie School, or in families where there were children attending this school. Some of the cases were far removed from each other, quite away from the village itself, and school attendance only was common to them.

2. Adults were only affected after a child or children had sickened.

3. At school there were some defects. The pails in the closets were not properly or frequently enough cleaned out, and there was not a sufficient amount of earth used in them. The closets had a foul smell.

4. There was the risk of sewer air finding its way into the school, from absence of any disconnection between the drain from the closets and the drain from the rain-water conductors and hand-basins.

5. The village itself is badly scavenged, and has no drainage system.

Infection through schools.—In the month of August two cases of diphtheria were notified, one from Kincardine and one from a farm near Limekilns. This latter case was notified on 22nd August, and on the same day Mr. Maclennan telegraphed to me for instructions, as the case was in the house of an extensive dairy farmer. I telegraphed back that the sale of milk must be stopped from the farm. On the 23rd August I visited the farm with Mr. Maclennan, and we found the boy who was notified as suffering from diphtheria, walking about the farmyard. As I had been notified in the usual way that the case had been diphtheria, I deemed it wise, notwithstanding any doubts that might naturally have arisen in my mind regarding the case, to accept the diagnosis of the medical attendant, and renewed instructions were given that milk was not to be sold from this dairy, in accordance with a clause in the regulations for dairies in force in the district. The milk sale was stopped for one day, and thus the instructions given were not acted upon. On the 26th September seven cases of diphtheria were notified from Charlestown—all in one house. Four of these cases were removed from Charlestown to Limekilns, and isolated in a room there. The removal was not advised or ordered by me, nor by any official of the Local Authority. The family in which these cases occurred got their milk from Brucehaven farm in part. It will be seen that nearly five weeks elapsed from the first case at Brucehaven and the occurrence of these seven cases. At the present time I shall deal only with facts, and afterwards discuss theories in connection with the outbreak. Prior to the case at Brucehaven, I have information that there were numerous cases of "sore throat" in Limekilns. These might either have been undefined cases of diphtheria or ordinary sore throat, but the prevalence undoubtedly was a determining factor in the epidemic.

In October five families were affected, and seven cases. Only one family had milk from Brucehaven. During the month of November fifteen cases of diphtheria were notified, and twelve of these were in Limekilns, near to the house in which the four removed from Charlestown were lodged. As regards the milk supply of these cases, out of eight families affected only four had a common source. From the commencement of the outbreak till this time, fourteen families had been affected, and six had one source in common. In the month of December only one case was notified, and the outbreak ceased.

In addition to the cases in Limekilns and Charlestown, sporadic cases of diphtheria were notified, but there was nothing of special interest in connection with these cases.

The first case we had to deal with was at the dairy farm of Brucehaven on the 22nd August, and the next cases were in Charlestown on 26th September. There was during this long interval no case recorded. Under these circumstances I did not believe that the case notified from Brucehaven was responsible for the Charlestown outbreak, and this opinion has been strengthened by what has subsequently come to light. There was certainly nothing impossible in such a connection, but milk is such an excellent medium for conveying the bacillus of diphtheria, that if there had been any pollution of the milk by this, the effect would have been seen at once by an outbreak of diphtheria following the ramifications of the milk supply. Subsequent information, supplied to me on the 5th December, cleared up all difficulties; as, about the middle of September, a girl in the farmhouse had an *ulcerated throat*, which in two days was so far better, that when a medical man was called it was not considered to be diphtheria, and certainly was not notified as such. This case leaves only an interval of about twelve days to the occurrence of the cases at Charlestown. The four cases previously referred to as having been removed to Limekilns (on the 29th September) accounted for the first case which was notified on 12th October from Limekilns. Personal contact at schools, Sunday schools, and churches, were sufficient to account for the spread of the disease. After the school had been closed, cleaned, and disinfected, there was an abatement in the epidemic, but scattered cases continued till the 1st of December.

In Limekilns there were certainly circumstances present favourable to the outbreak. The village lies on the seashore, very little above high-water mark; and at the back of the village steep rocks rise abruptly to a height of about 100 ft. The water issuing from the rocks causes a dampness of the soil and of the houses, which are important factors in the origin of diphtheria. In one row of houses in Limekilns, where the disease located itself to a considerable extent, dampness of the soil and of the foundations and walls of the houses were marked insanitary conditions, and about these houses there were evidences of carelessness in the removal of refuse matters. Complaints were made of the sewers, but these are of modern construction, and freely ventilated, and I cannot associate them with the outbreak. If the Isolation Hospital had been ready, and the first case at Brucehaven removed, probably there would have been no others there, and none in Charlestown; and if the four cases removed to Limekilns had been isolated, in the proper sense of the word, there would have probably been no spread of the disease there.

Outbreak in Lochore.—An outbreak of diphtheria occurred in the village of Lochore, and several cases proved fatal. The first cases were intimated on 21st January, and the patients were all children under 5 years of age. At the time of the outbreak, a snowstorm was breaking up, and the snow melting, the consequence being that the roads were quagmires, and the ground like a wet sponge. The houses are all more or less damp there, and the ground in the vicinity is laden with filth. These causes certainly contributed to the outbreak, if they did not actually cause it.

Four cases occurred at Cluny, all in one house. There was found a choked drain within a few feet of the house. The slop stones for this drain were untrapped, and the drain was not ventilated. The house was also found to be damp. When I visited, I found that a cat, which had been fondled by the first person who turned ill, had been coughing and running from the eyes and nose for some time before, and was looking ill.

Four cases of diphtheria occurred at Thornton in one house. This time it was worthy of note that, opposite the house where the cases occurred, the slop and soil water thrown out by the villagers accumulated in the rough gutter which takes the place of a sewer. The effusions from this nuisance must have been breathed by the occupants of the house, and either caused the diphtheria, or predisposed to it, which comes very much to the same thing. In the natural history of infectious diseases, predisposing causes are probably of greater importance than exciting causes, as, if you remove the former, the latter cannot act; in other words, the disease-producing organism does not find a suitable soil for its life and work.

Various other scattered cases of diphtheria occurred, but there were no special features in connection with them.

HOSPITALS.—When the County Council and District Committee assumed the active duties of administering the Public Health Acts, there was not an isolation hospital in any of the districts worthy of the name. There were one or two houses called hospitals, but they were not fit for the treatment of infectious cases with safety to the public or the patients.

The large burghs were equally insufficiently provided. Dunfermline District Committee was the first to take action, and they wished all the burghs to join in the establishment of a Combination Hospital, recognising the sound principle that, for effective sanitary administration, large areas, formed by the grouping of small ones, are absolutely necessary. Three royal burghs entered into the scheme, and one police burgh stood aloof until the progress of events led it also to enter the combination; and now, in Dunfermline district, there is one Central Hospital, thoroughly equipped for the use of all the burghs and the district.

St. Andrews District Committee also recognised the advisability of burghs combining with the districts, and erected a hospital near Pittenweem, which serves the district and all the coast burghs, namely, Elie, Earlsferry, Pittenweem, E. and W. Anstruther, Kilrenny, and Crail.

A further scheme, not yet complete, owing to almost insuperable difficulties of getting a site, is to erect a hospital for the northern part of the district, and provide for the burghs of Newport and Tayport. When the scheme is completed all the burghs will have hospital accommodation.

Cupar District Committee acquired a large villa, which had been used as a school, and adapted it for a hospital. While by no means constructed on ideal hospital lines, the house has been most useful. It stands in its own grounds, and has a large walled-in garden, which adds much to the amenity of the hospital. The burghs, royal and police, have acquired the right to send patients there on terms most favourable to them. During a threatened scare of smallpox a Spiers Iron Hospital was purchased, and put up near Guardbridge, and it will provide both for St. Andrews and Cupar district and burghs, should smallpox again break out.

Kirkcaldy District Committee acquired a hospital at Wemyss, formerly meant for medical and surgical cases. It had two large and one small ward, and in it many cases of smallpox, scarlet, diphtheria, and typhoid were treated during the two years it was used by the District Committee.

This hospital, of course, was never large enough for the large and populous district, and the committee determined to erect a hospital for the whole district, situated as far as possible in a central spot, and which would be available for such burghs as would care to join the scheme.

Kirkcaldy burgh established a very fine hospital for itself, and the burghs of Kinghorn and Burntisland acquired the right to send patients to it. The burghs of Dysart, Markinch, Leslie, Lochgelly, Buckhaven, Methil, and Innerleven joined with the District Committee in establishing a hospital situated to the west of Thornton.

MORTALITY STATISICS.—In Scotland those who have to tabulate and calculate death rates labour under a great disadvantage, as they are unable to apply corrections for the age and sex incidence of population. The general death rate is thus too often a fallacious test of the sanitary conditions of a community, which may have a population with a large preponderance of aged males, and which will inevitably raise the death rate. On the other hand, another community may be composed to a great extent of young people and females, and then its death rate will be lowered.

In sanitary areas the Registrar-General does not give in the census returns, the populations living at different ages, but they are included in registration districts, which are not conterminous with sanitary areas. It is thus impossible to give death rates for children under 5 years of age, which are most important indices of the sanitary conditions under which these occur.

One of the best, most sensitive, and most reliable tests, when these are available, are the deaths of infants under one year old. The death rates for infants vary very widely in the four districts; Cupar and St Andrews having usually the lowest, and the mining and more populous districts of Kirkcaldy and Dunfermline the highest.

The lowest death rates in the districts were in the following order:—

Cupar, 39; St. Andrews, 75; Kirkcaldy, 85; Dunfermline, 84.

The highest were—

In Kirkcaldy, 170; in Dunfermline, 143; in Cupar, 111; and in St. Andrews, 111.

For the four districts the rates in successive years from 1892 were—

109, 134, 100, 108, 91, 114, 116, 107, 118.

In some mining villages the infantile death rates have been unduly high, and, in the hope of reducing them, arrangements were made in connection with the technical education classes, carried out by the County Council, to have lectures given on infantile management, feeding, clothing, etc. I hope to have this arrangement extended, as nothing but good could come out of it.

GENERAL DEATH RATES.—These, as will be seen in the following tables, vary widely, being usually much lower in the agricultural—Cupar and St. Andrews—than in the mining and much more populous districts—Dunfermline and Kirkcaldy:—

In	St. Andrews,	the	highest	rate	was	16
,,	,,	,,	lowest	,,	,,	12
,,	Cupar,	,,	highest	,,	,,	21
,,	,,	,,	lowest	,,	,,	15
,,	Kirkcaldy,	,,	highest	,,	,,	18
,,	,	,,	lowest	,,	,,	13
,,	Dunfermline,	,,	highest	,,	,,	19
,,	,,	,,	lowest	,,	,,	13

In Dunfermline district the rates have been coming down during the past five years.

The very low rate of 14·4 was recorded for Kirkcaldy in 1902, and of 13 for St. Andrews district.

Zymotic rates.—The rates will be seen in the detailed table, and I only now refer to the highest and the lowest in the four districts:—

Cupar,	highest	1·2
,,	lowest	0·5
Dunfermline,	highest	2·8
,,	lowest	0·9
Kirkcaldy,	highest	3·3
,,	lowest	1·1
St. Andrews,	highest	1·4
,,	lowest	0·6

In recent years the zymotic rates are lower. The highest of five years in Cupar was 1·1; Dunfermline, 1·7; Kirkcaldy, 2·9; St. Andrews, 0·6.

Tuberculous rates.—The highest phthisis death rate in Cupar was 2·3, and the lowest 1·1; in Dunfermline the highest was 1·6, and the lowest 0·8; in Kirkcaldy the highest was 1·3, and the lowest 0·7; in St. Andrews the highest was 1·5, and the lowest 0·9. In Dunfermline and Kirkcaldy there is an extensive mining population, and in Cupar and St. Andrews there are very few miners, and the phthisis death rate is higher than in the two former. This immunity from phthisis amongst miners I referred to as early as the year 1887 as follows:—

> "Twenty years ago air was very bad in mines; ventilation was almost unknown, and the hours were very long. Nowadays the air is generally good; ventilation is efficiently carried on, and hours of work are short. The miner works hard whilst at his work, but he has short hours and many holidays. In the tables of statistics I have shown that phthisis, contrary to general opinion, is not a common disease amongst miners, and my own everyday experience for ten years in a large mining population supports this. In fact, I know of no disease peculiar to miners, or any disease in excess existing amongst miners. I have also consulted many other medical men practising amongst colliers, and their opinion coincides with my own. In conclusion, I have to state, as my belief, that the conditions connected with miners' occupation are as favourable to health as those in the occupation of any other workmen, and this opinion is borne out by the vital statistics quoted."

EDUCATIONAL PROPAGANDA.—This retrospect might have ended with the mortality rates, but it would have left out reference to important work which has been carried out by the County Council in connection with its Technical Education Scheme directly bearing on preventive measures. I do not think I overstate the mark when I claim that Fife has done more for technical education than any other county in Scotland. It is not part of my scheme to attempt to explain all that has been done, but simply to show that in connection with technical education instruction the demands of sanitation and hygiene have not been neglected. In various centres of the county, lectures have been given by medical men on such subjects as sick nursing, ambulance work, sanitation of houses, fevers and their management, sick cookery, consumption and tuberculous diseases and their prevention, bacteriology of air, water, and foods, disinfection and disinfectants, infant management. At the present time there are two lady lecturers teaching ambulance work, domestic hygiene, infant feeding, and by this means I anticipate the greatest possible benefit. I hope to get one or two centres selected where infantile mortality has been unduly high, for lectures specially on infant management. In dairying, the greatest possible benefit has accrued

TABLE IV.—*Infantile Zymotic General and Tuberculous Death Rate.*

Year.	Deaths under 1 to 1000 Births.	General Death Rate.	Total Zymotic Death Rate.	Tuberculous.	
				Phthisis.	Other than Phthisis.
			CUPAR DISTRICT.		
1892	63·6	21·1	...	1·5	1·2
1893	92·9	18·4	1·2	2·3	1·4
1894	75·0	17·8	0·878	1·9	0·7
1895	43·0	16·3	0·572	1·7	0·7
1896	39·0	17·1	1·104	1·8	0·315
1897	111·0	15·5	0·753	1·2	0·6
1898	85·0	17·5	1·12	1·8	0·68
1899	92·0	17·5	0·75	1·9	0·82
1900	105·0	18·8	0·703	1·5	0·44
1901	63·0	15·073	0·929	1·195	0·664
			ST. ANDREWS DISTRICT.		
1892	111·0	15·4	0·665	1·3	0·724
1893	108·0	16·56	1·71	0·978	1·28
1894	97·058	13·08	0·545	1·03	0·787
1895	78·8	16·02	0·410	0·939	0·821
1896	108·2	12·4	1·3	0·971	1·428
1897	76·0	13·2	0·901	1·2	0·8
1898	111·0	15·9	0·86	1·59	0·71
1899	77·0	13·1	0·63	1·1	0·56
1900	92·0	15·2	0·796	1·46	0·199
1901	97·0	15·918	0·951	1·395	0·761
			DUNFERMLINE DISTRICT.		
1892	90·1	17·12	1·7	1·4	1·2
1893	143·0	19·17	2·86	1·25	1·17
1894	105·0	17·3	2·075	1·644	1·018
1895	129·4	17·1	2·507	1·4	1·1
1896	101·07	13·5	0·979	1·07	0·832
1897	153·0	17·4	1·9	1·23	1·91
1898	116·0	17·3	1·7	1·0	1·7
1899	124·0	17·0	1·6	1·3	1·3
1900	149·0	18·3	1·5	1·2	1·5
1901	139·0	16·781	1·748	0·893	1·087
			KIRKCALDY DISTRICT.		
1892	170·0	17·1	1·161	1·161	0·696
1893	155·0	16·48	2·218	1·13	0·782
1894	104·9	16·7	2·299	1·3	0·248
1895	124·3	18·1	3·3	0·834	0·667
1896	94·13	13·4	1·4	0·786	0·694
1897	118·0	16·2	1·7	1·1	0·6
1898	131·0	18·5	2·9	0·9	0·9
1899	111·0	16·0	1·9	1·2	0·9
1900	106·0	16·5	1·4	0·885	0·643
1901	126·0	17·785	2·560	1·003	1·072

from the teaching of scientific methods, and at the various competitions for butter-making all over the country, Fife has come to the front. Technical education is not merely the application of knowledge suitable for the commercial wants of the individual, but it has a wider and more utilitarian application. The more scientific and skilled the workman becomes, the more he benefits his fellows. By making good butter, there is every assurance that the milk supply will be equally good and pure.

In addition to these channels of instruction and information, there are the ordinary routine methods followed in connection with the notification of infectious diseases:—Notices of School Boards and teachers regarding outbreaks; notices and directions sent to heads of houses regarding their responsibilities under the Public Health Act, and giving directions as to isolation of infectious cases, and as to the care and manner of application of disinfectants. In special outbreaks, as in smallpox, special instructions are sent out as to vaccination. When cholera and plague have threatened from time to time, circulars were issued with special reference to these diseases. The publication of annual reports, and the comments on these by the newspapers, have a very valuable influence, as they bring before the public information which otherwise would be passed in these reports. Public feeling regarding the value of sanitation has entirely changed in ten years, and we nowadays get encouragement where formerly it was the opposite.

FURUNCULOSIS: A SURVEY AND AN APPLICATION.

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In adopting the above designation for the subject of this paper, it must be predicated that the term is not used in its restricted sense as applying merely to an eruption of pustules. While not prepared to employ the expression "contagious furunculoid," first coined by Professor Laycock in his sweeping classification, under one title, of "boils, carbuncle, whitlow, and the malignant pustule of the French," there is a temptation not entirely to ignore the philosophical professor's meaning. Yet, for reasons that can be justified on etiological and clinical grounds, it is convenient to understand as being embraced under the term Furunculosis—painful pustules, boils, and the smaller carbuncles. It is, indeed, difficult to draw a sharp line of distinction between these arbitrary varieties—the differences being largely of degree and not of kind. Popularly the middle name is that best known. "Boil" is a word evidently related to the Scots verb "beal" (meaning to suppurate); and still more closely akin to the Old

English "byl," Middle English "bile," and the present-day Scots noun "bile"—all equivalent to furuncle or boil. The German word "beule"—a lump on the skin—is probably identical in root as in meaning with the English substantives and the Scots verb.

It may further be remarked that in some parts of Scotland the word "boil" signifies the hepatic secretion, and not the cutaneous pustule.

The disease appears at a very early stage in history and literature; for, as is well known, the sixth Egyptian plague is rendered in the English version as the pestilence of "boils and blains."

But naturally a good deal of speculation is permissible as to the precise clinical location of the malady. Commentators differ. On the whole, it seems to be agreed that the scourge was not of so severe a nature as would be implied by an epidemic of what we now style the Bubonic plague.

The quaint scripture narrative rather lends to the supposition that the disease was more of a disabling and loathsome, than of an early fatal character. "Thou shalt be smitten in the knees and in the legs with a sore *boil* whereof thou canst not be healed, from the sole of thy foot to the crown of thy head."

It may have been the black leprosy—*χώρα ἀγρία*—of the Greeks, a kind of elephantiasis, to which Pliny in his "Natural History" also makes reference. In truth, the number of Eastern diseases known at the present day, that are entitled to be considered in investigating this domain, is almost legion. Prominent among them, for instance, is the Aleppo or Delhi boil, common in Asia Minor, India, Arabia, Persia, Syria, North Africa, and the Mediterranean Islands. It is a local sore, caused, no doubt, as the result of infection from organisms present in polluted water, or communicated by insects. Seasonal conditions seem to exert an influence upon its production, as in India it is more prevalent towards the end of the wet season—a circumstance that accords with our knowledge of the mode of increase of germs.

Parkes admits that the Aleppo boil, the Damascus ulcer, and some other allied affections are "probably more connected with the true contagions." But he differentiates clinically, as well as geographically, those occurring on the borders of the Levant from those more or less endemic in India. The Delhi boil he found to have decreased since the waters of the Jumna began to be used (for drinking purposes) instead of the impure well-waters of the plains; and, speaking generally, he concluded the unhealthy boils or ulcers so common in India to be probably connected with bad drinking water. Hirsch attributed those diseases to parasitic contagion imparted by ablutions with infected water. Manson considers that occasionally infection takes place through the blood, as in furunculosis produced by decaying food, foul water, and sewer gas.

An endemic of boils prevalent in the vicinity of Frankfort during 1848 was officially declared to be due to the drinking of water rendered impure "by the presence of hydrogen sulphide gas."

Sir Thomas Watson regarded boils and carbuncles as being kindred disorders, in respect that occasionally a carbuncle results from the confluence of two or three boils, and from the simultaneous prevalency of the two. He, however, was doubtful as to the "epizootic" origin of the affections.

Laycock was acute enough to draw an inference from the wider diffusion of furuncular maladies following upon the importation of the hides of animals suffering from a carbuncular distemper —from the south of France, Italy, Germany, Poland, and Hungary. The cutaneous appearance of the dreaded anthrax naturally led to his observation—clinical and microscopical research, not then being so complete as to define the separate pathological identity of this disorder.

The close attention since bestowed upon the question has been of the utmost value in the study of affections more benign, but somewhat cognate in appearance and development. The discovery of the *Bacillus anthracis* was itself sufficient to suggest the organismal character of boils and carbuncles. The infection from animals was also significant. It is a curious circumstance that shepherds, farm labourers, and persons having to come in contact with living animals, seldom contract the disease by mere contagion. Slaughterers, on the other hand, are prone to be affected through scratches and abrasions of the skin. Dried hides communicate the virus in the splenic or internal form of anthrax through the germs being breathed into the respiratory tract as *dust.* It has been ascertained that the bite of an insect that has rested or fed upon infected matter may give rise to the external or cutaneous variety.

Pasteur, investigating the etiology of boils, obtained the *Torula pyogenica,* which he declared to be their specific micro-organism. Startin had already demonstrated their inoculability.

A boil begins as a tingling, smarting, painful pimple, which soon shows a yellow spot, never a vesicle, at its apex. Round the pustule there is a more or less defined area of intense congestion, which causes swelling of the skin, while the conical projection of the pustule becomes more and more marked. Meantime the pain increases, is partly throbbing in character, and the acute aching tension is frequently aggravated by sharp lancinating darts.

The abscess eventually matures, points, and, unless surgically aided, finally discharges of itself. The central slough or *core* then becomes revealed. Suppuration proceeds around its circumference, and in the course of a day or two the core in its turn is expelled. The pain now rapidly subsides, the redness and œdema disappear, and the cavity fills up with healthy granulations.

Such, in brief, is the history of a typical boil, affording an interesting example of the result of the action of micro-organisms when introduced in relation to diseased or injured hair follicles in the skin. But there are deviations from the normal course, and a boil may abort,—that is, proceed only partially to the ultimate stage; the effused products become absorbed without lesion of the skin, and the furuncle is now spoken of as a "blind" boil.

The particular cocci and their method of developing boils will fall to be considered later. For the present it will be advantageous to recall the general structure of the tissue invaded.

The skin consists of two layers, the superficial being the cuticle or epidermis; the deeper, the cutis vera or corium. The cuticle is composed inferiorly of deep elongated cells that rest upon the corium—the *rete mucosum* or Malpighian layer. Upon it lie several strata of rounded cells, that become more and more flattened as they approach the surface. This division of the skin is non-vascular, although leucocytes have been noted in the Malpighian layer. The under surface of the cuticle is moulded upon the upper aspect of the corium, which is divided into a reticular and papillary layer. The former contains hair follicles, sweat glands, and fat. The latter, immediately subjacent to the cuticle, receives the upper portion of the hair follicles and glands, together with the fine terminations of blood vessels and nerves. The papillæ are small eminences on the surface of the corium, and are adapted into corresponding ridges in the cuticle. Fine blood vessels enter most of the papillæ, forming either simple or branched capillary loops, according to the size and shape of the papillæ. By collateral anastomosis they form, in the dermis, a dense vascular network. Other papillæ, whose function is entirely tactile, receive nerve terminations which likewise interlace in delicate plexuses. The lymphatics, so important from the point of view of infection, form reticular meshes that become finer as they approach the surface. Underneath, they communicate with larger vessels that eventually conduct to the lymphatic glands. In addition to the plexuses, separate lymphatics accompany the blood vessels to which they are applied; two passing commonly to each capillary loop, and joining and anastomosing over the vessel. Thus we are enabled to comprehend the richness of the lymphatic flux to and from the skin.

The remaining structures of the skin are the hair follicles, the sebaceous and sudoriferous glands. The first are concerned in the development of furunculi. With the exception of the palmar and plantar surfaces, hair follicles are universally present on the skin. They are the receptacles in which the hair roots are fixed. The hair filament itself is really a modification of the cuticle, and the follicle or recess is an invagination of both cuticle and corium. The follicle consists, accordingly, of an outer coat continuous with the corium, and of an inner lining continuous with the epidermis. Near its upper end, the follicle usually receives the opening duct of one or more sebaceous glands, while at the bottom it becomes slightly dilated to correspond with the bulging of the hair root. The thin homogeneous epidermic lining adheres to the hair filament when extracted, and is hence called the "root sheath." At the lower extremity of the follicle, the root-bulb is incorporated with the corium, which thus supplies material for the production and growth of the hair. The dermic coat is copiously supplied with blood vessels, lymphatics, and nerves; so that any injury to the follicle, such as forcible removal of the hair, clearly exposes the sanguineous and lymphatic stream to the risk of septic contamination.

For the present purpose, it is not necessary to more than recapitulate the existence and location of the glandular structures in the skin. The sebaceous glands are found along with the hair follicles. They are lodged as small saccules in the substance of the corium, and they discharge their fatty secretion by minute ducts near the follicular orifices. Several of them may open into the same follicle.

The sweat glands are situated at varying depths in the subcutaneous tissue. Each gland consists of a tube, coiled, at its lower end, into a ball. It is continued upwards through the corium by a narrow duct with a slightly widened orifice. The vascular supply to those glands is very rich. By their means a large amount of fluid is eliminated from the body; and it would also seem that under certain conditions absorption takes place either through these structures or directly through the cuticle. Even solid particles, when rubbed into the sound skin, may be absorbed, especially when applied in a fatty vehicle; as for instance in mercurial ointment. Such particles find their way into the underlying lymphatics. Much more readily does absorption occur when the skin is abraded by injury.

A boil is the result of inflammation around a hair follicle and its glandular appendages. While it has to be admitted that we are as yet largely in ignorance of the precise conditions that favour the development of boils in varying conditions of depressed vitality, there is abundant evidence as to the actual germ concerned in their production. So definite is our knowledge, that the staphylococcus and streptococcus have come to be styled "the organisms of suppuration." The staphylococci (*aureus* and *albus*) are the most common causal agents in localised abscesses, pustules, boils, and carbuncles. They are present in the air, in dust, and on the skin, in the throat, and on mucous surfaces. When a superficial lesion exists, we can readily understand how they affect the deeper structures. In most cases the micrococcus is attacked by the healthy cells of the blood stream, and no harm ensues. But if there be a decided local devitalisation, and, in particular, if the *general* tone is from any cause lowered, then the organism is able to gain a footing, to multiply, and produce that inflammatory reaction of the tissues that results in pustule and boil formation. The cocci find a favourable nidus in the follicular lymph spaces, and they may actually invade the capillary walls. As the germs increase, they set up irritation in the surrounding tissue cells. By chemiotaxis, the leucocytes are attracted to the site of invasion, they collect, and, being devitalised by the toxins of the organisms, they become pus cells. In this way *liquefaction* is produced. But in the case of so-called blind boils or aborted carbuncles, the process becomes arrested, the phagocytes gain the mastery, and absorption occurs. Owing to the density of the cutaneous tissue surrounding hair follicles, liquefaction interferes with the vitality of the tissue encompassed, molar degeneration takes place, and sloughing or a "core" results. The process advances until eventually the reaction of the connective tissue, expressed by cell proliferation and the formation of new capillaries, opposes, to further extension, a healthy granulation tissue barrier. It has been noted that cutaneous follicular abscesses occur in children without the formation of a core or slough, in situations and under conditions which in adults would certainly be so accompanied. We are from this fact entitled to argue that the molar necrosis of the soft tissues is due to the *density* of the adult tissue, and not to a destruction of it by autotoxins.

Marmorek and others have proved experimentally that the same organism (streptococcus) may produce at one time merely a passing erythema; at another, a local abscess; again, a spreading erysipelas; or, finally, a general septicæmia. There is reason to believe that a similar condition occurs with regard to the action of the staphylococci, much depending upon the number of organisms that have gained entrance into the tissues, on the locality of invasion, and on the resisting power of the constitution. It is more than probable that the ruthless septicæmia accompanying general infective periostitis and osteo-myelitis in young subjects is, in some cases, initiated by a simple pustular infection in the skin. Friction of the epidermis with pus from these cases will produce a crop of boils.

Lately, I had under observation an infant who developed a boil on her arm, and general septicæmia with death resulted.

Boils vary in size and in severity. Carbuncles are pathologically identical with boils, but they affect a larger area, and they are not usually so multiple as furunculi. By the time one boil heals, two or three others appear, either in the same locality, or it may be at quite a different region of the body. There may be an almost simultaneous crop, or only a few isolated furunculi keep appearing from time to time, so that the patient's health becomes undermined by the tiresome harassment of pain and sleeplessness. The organisms seem to have a selective power, and perhaps the property of latency. Boils are most apt to develop on the dorsum, from the suboccipital region to the nates. The back of the neck is the most usual site, and next the buttocks. Succeeding, in order of priority, are the outer aspect of the thigh, the leg, arm, forearm, wrist, and back of the hand. The chest and abdomen are comparatively immune. The face is an occasional site, and in this locality boils may become possessed of exceptional virulence; the reason, according to Paget, being the close proximity to large venous trunks with resulting septic phlebitis and thrombosis.

They are most frequent in youth; schoolboys and adolescents being very liable. Women are less subject than men, but seem specially sensitive to the pain and exhaustive effects. In addressing the Abernethian Society in 1894, Sir James Paget thus referred to the malady: "Every one knows the disease, when a patient becomes affected with a succession of boils. No one can tell why. The patient may have no definite disease, but he has boils; and so it goes on for weeks and months." We are probably not much farther advanced at the present time in regard to our knowledge of the intimate predisposing factors. Furunculi attack persons who are apparently in the best of health. Of the influences that favour their occurrence we are, however, able to derive some notion from their proneness to appear after, or concurrently with, debilitating illness, and under defective hygienic or climatic conditions. Any sudden change in diet or in daily habit may give rise to an outbreak. For instance, country girls going into town are apt to suffer, and the same may be said of city girls, especially of the domestic-servant class, on their going to reside in the country. Erichsen was inclined in certain cases to look upon the appearance of boils as salutary. "The health gradually improves."

Insufficiency or excess of animal food has been ascribed as a cause. Athletes are apt to become affected immediately after they have commenced training. Want of food, hard work in a vitiated atmosphere, and residence in damp, unhealthy houses, are known to predispose. Boils occur after exhausting fevers and in certain organic diseases. Thus, in chronic renal cirrhosis and in diabetes mellitus, they have long been noted as accompaniments. Spillman and Parisot observed that boil formation was apt to occur in any form of increased urination, whether saccharine or not, and they attributed the cause to dehydration, with consequent defective nutrition of the cutaneous structures. Murchison found boils occasionally in connection with jaundice. They are twice as common during the first four months as for the rest of the year.

Bockhart investigated closely the organismal etiology of boils, impetigo, and sycosis, and he came to the conclusion that they are different forms of the same morbid process. The germ concerned was a staphylococcus, 0·5 to 0·8 mm. in diameter. Cultures gave both *albus* and *aureus*—sometimes alone and sometimes together—

and he found the same in the pus of boils. Inoculations with cultures produced pustules containing identical cocci. Pustules that were perforated by hairs became boils, *i.e.* with "core" formation. Sycosis differs from furunculosis in beginning generally in papular, and not pustular, form.

Acne is an affection of the sebaceous glands due to the action of a specific micro-organism named the *Bacillus acneis.*

The treatment of furunculosis has called forth much ingenuity on the part of physicians, surgeons, and dermatologists. Many of the older clinicians who regarded the condition as a salutary effort on the part of the system, were content to encourage the malady or, at any rate, to adopt the attitude of *laisser aller.* Eventually, in the great majority of cases, the vis medicatrix brought about the consummation so complacently expected. John Hunter "cured" himself of a disposition to boils by taking "the fossil caustic alkali night and morning, in milk, for three months." Watson recommended liquor potassæ and sarsaparilla for some cases, but more generally prescribed dilute sulphuric acid. All recognise that where any constitutional dyscrasia or complication is recognised to be present, that ought to be remedied. It would obviously be foolish to attempt any routine in this matter, as every case, even if known to be founded upon some particular habit of constitution, requires careful and separate consideration. Paget, the greatest authority upon this as on so many other subjects, spoke of three remedies that were held in good repute—liquor potassæ, quinine, and yeast. He asserted that he found each of the three useful in certain cases, upon which the others had no influence whatever.

In endeavouring to solve the problem of effectiveness, he propounded that quinine was most likely to be found of benefit in those who were under some kind of relation to malarial influence; liquor potassæ, in those who were gouty; while of yeast he could say nothing, beyond that he had no doubt whatever of its being a cure in some cases. Debouzy, finding yeast to be a popular remedy in the countryside for recurrent boils and carbuncles, employed it with success. Brocq approved of yeast, but pointed out that its action was very uncertain, and depended upon a special preparation. Conturieux obtained a yeast with a constant therapeutical action. From it he extracted a product which he termed *levurin.* Aragon also got good results from this.

Calcium sulphide has enjoyed much repute in the treatment of furunculosis. Unna supports its exhibition. Russlow prefers it, or rather sulphur, to arsenic or yeast. One authority asserted that calcium sulphide, administered in $\frac{1}{100}$-gr. doses, tends to check boil formation, but that, given in $\frac{1}{2}$-gr. doses, it hastens the process! Vieil, on the other hand, condemns cathartics, sulphide of calcium, and arsenic. So that, altogether, therapeutical conclusions are sufficiently confusing, and we are forced to fall back upon general principles for improving health and tone. With regard to local remedies, the indications are to brace the vitality of the cutaneous structures, to apply antiseptics, and, where boils and carbuncles have formed, to hasten their maturation and removal.

Having now considered the general aspect of this subject, I wish, in conclusion, to refer to my observations on the frequency with which furunculosis affects gamekeepers and ghillies employed in deer forests.

Time and again, young men in the very perfection of rude health have presented themselves for advice on account of some degree of furuncular disease. Almost invariably the malady begins on the hands or forearms, and, having gained a footing, it progresses in the usual way, extending, it may be, to entirely different regions of the body. I have noticed, too, that maids engaged in the preparation of venison for cooking are liable to infection. Sometimes the course is prolonged, not merely to a greater or less extent disabling the patient from attending to work, but on account of the pain and sleeplessness sometimes seriously affecting the general health. In one case, I have seen a fatal result follow a pustule on the upper lip.

The popular notion among the classes I refer to is that the bone of the deer possesses virulent properties. The same idea seems to prevail among butchers having experience of cattle, sheep, and deer. It has long been noted that butchers are themselves prone to boil-formation, and the fact has been ascribed to their excessive consumption of nitrogenous food. The explanation does not suffice. Possibly the ingestion of too much animal food may lead to such a deterioration of the vitality, as the more readily to permit of inoculation becoming effective. But the opportunity for local infection is constant. A scratch from a knife, or from the jagged end of a bone, or the evulsion of a hair from its socket, enables pathogenic cocci to gain entrance to the circulation, and these organisms exist abundantly on all animal skins. Experts in flaying inform me that the liability to boils may be stated in the following order:—first, deer; second, cattle; third, sheep. It is easy to accept this tabulation on grounds of *nettoiement.* Sheep are subjected at least once a year to thorough cleansing with a powerful antiseptic solution. Their fells must therefore be placed in a comparatively innocuous condition. Cattle receive a certain amount of attention in grooming; but the staphylococcus of the *fera naturæ* enjoys complete immunity from interference. It may well be that the germ gains in virulence as compared with the organism on more domesticated beasts. I have had boils examined for organisms, and have obtained only the staphylococci.

While the general line of treatment must necessarily follow those adumbrated in the above resumé, there are some suggestions in the way of prevention and amelioration that may briefly be submitted.

Gamekeepers and ghillies engaged in the skinning of deer should wear gloves, either of linen or chamois or guttapercha. Failing these, or in supplement to them, they should smear hands and forearms with butter, or oil, or preferably with boricated vaseline. They ought invariably to thoroughly cleanse their hands in an antiseptic solution (carbolic, 1 in 40; sublimate, 1 in 2000) after completing the operation, an antiseptic soap being also employed. The same kind of precautions ought to be observed by kitchen-maids and others who require to dress venison for culinary purposes.

As soon as a boil has appeared, the most scrupulous care should be bestowed upon it, with the view of limiting its infectivity. Unna's mercurial plaster, or its equivalent, ought in the first instance to be applied in the hope of promoting absorption. In the event of this object being defeated, maturation should be promoted by means of an antiseptic dressing, and the discharge should be very carefully guarded from coming into contact with the surrounding skin. Should the furuncle assume the dimensions of a carbuncle, this ought not to be incised, but it will be advisable to enlarge or connect the fenestræ in the skin in order to allow freer egress to the discharge and slough.

The local condition being the paramount one in the class of cases now under consideration, it is necessary to regard the constitutional element only in the sense of maintaining the general tone. I have always had good results from exhibiting morphia to control pain and favour sleep. Iron and arsenic are invaluable as hæmatinics, while wholesome—not too generous—feeding, with, in depressed anæmic cases, the administration of suitable stimulants in careful quantity, completes the therapeutic repertory.

REFERENCES.

WATSON's "Practice of Physic." ERICHSEN's "Surgery." TREVES's "Surgery." HILTON FAGGE's "Practice of Medicine." PAGET's "Lectures." MUIR and RITCHIE's "Bacteriology." PARKES' "Hygiene." DAVIDSON's "Tropical Diseases" (Manson's art.). *Monatsh f. prakt. Dermat.*, Hamburg, 1887. *Semaine méd.*, Paris, 1893. *Therap. Monatsh.*, Berlin, 1896. *Indian Lancet*, 1896. *Brit. Med. Journ.*, London, 1896. *Ann. de dermat. et de syph.*, Paris, 1887. *Journ. de med. et de chir. prat.*, 1894. *Presse med. belge*, Bruxelles, 1899. "Le malattie del lavoro," Florence, 1902, etc.

THE NERVOUS AFFECTIONS OF THE HEART.[1]

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SECOND SERIES.

LECTURE III.—ALTERATIONS IN FORCE.

THE concluding part of our subject is now before us: we have to consider variations in the force of the heart. The study of these variations must, in the nature of things, necessarily trench to some extent upon the subjects which we have passed in review during the previous two lectures, inasmuch as variations in force almost always include modifications of rate and alterations of rhythm. As already pointed out, it is therefore scarcely possible to avoid a certain amount of overlapping in discussing these conditions. Variations in force are conditioned in physiological circumstances by a great many different factors. They are under the control, under these conditions, of the nervous system. Whenever the heart is subjected to any excessive strain, an impulse is sent up by the afferent vagus system—the analogue of the depressor nerve in the rabbit—as the result of which an impulse, descending by the accessory fibres, lessens the force of the heart. This mechanism constitutes a natural safety-valve which prevents the heart from manifesting an excessive, and possibly destructive, degree of action in the attempt to overcome the strain to which it is subjected. Such is the anabolic action of the vago-accessory mechanism. There is a possibility in the augmentor system of increasing the force of the heart—a katabolic action; that side of the physiology of the circulation, however, is by no means so well known. From the results obtained by modern physiologists, we know that, as regards its force, the heart is almost entirely governed by the vago-accessory system of nerves. Experiments which have been carried out during recent times upon this subject, show us that, whether in respect of stimuli applied to, or demands made upon, the heart, section of the accelerator and augmentor nerves has comparatively little effect upon the force of the systole. Any operation, on the other hand, by which the functions of the inhibitory nerves are abrogated, invariably produces very remarkable effects; there cannot, in short, be a greater contrast in the whole realm of visceral innervation than is shown by the behaviour of the inhibitory and the augmentor nerves. Such are the most important of the nervous influences which rule the force of the heart. It is, moreover, to be remembered that the force of the heart is subject to considerable variations, according to a number of different influences which are at work upon it, some apparently almost irrespective of the nervous system. Whenever the pressure that the heart has to overcome is reduced, the force of the heart becomes correspondingly diminished. When the resistance is increased, the force of the cardiac activity is augmented; but if the resistance to be overcome by the heart reaches an excessive level, the force suddenly comes to an abrupt end. It seems, therefore, that just as a certain mean of blood pressure is required to call forth the properties of the arterial walls, so a certain degree of resistance is necessary to bring out the full activities of the heart. It therefore follows that both extrinsically and intrinsically the force of the heart, like its rate and rhythm, is subject to great variations.

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[1] "The Morison Lectures," delivered March 2, 4, and 6, 1903.

The main object of this lecture is to discuss the increase, decrease, and inequality of the force of the heart. It is not necessary to dwell at length upon the various alterations which lead to such changes. They have really been so fully dealt with in the two previous lectures that they may only be adverted to briefly. The same structural changes in the heart and blood vessels that were mentioned are operative here. Analogous, if not identical, toxic effects upon the heart and blood vessels, conditions of stress leading to strain, and lastly, the influence of the nervous system, especially the inhibitory mechanism—all these need only be referred to very shortly. The various abnormal conditions as to force that will occupy us during this lecture are chiefly summed up in the terms palpitation, tremor, syncope, and asystole.

By palpitation is meant a change in the action of the heart, resulting not only in a great increase in its rate and force, but in a subjective sensory disturbance, so that the victim of palpitation becomes conscious of a certain amount of discomfort, the most prominent feature of which is throbbing in the chest. It is thus sensori-motor. Last year, in my remarks on angina pectoris, the subject of palpitation was briefly mentioned as being in some degree analogous. Palpitation, consisting in acceleration of rate, as well as increase of force in the action of the heart—presenting a sensory as well as a motor aspect—necessarily touches upon a good many subjects in cardiac physiology. The chief cause which leads to palpitation is diminished vagus control, and this is brought about in a variety of different ways. In the first place, it may be by the direct influence upon the lower centres of some emotional disturbance higher up. It is well known that this symptom of palpitation is far more common in the first than in the second half of life. It is very much more common in the fair sex than in that which is called the sterner sex, and it is found that year by year, as we advance in life, the tendency to palpitation becomes less, if there be no toxic disturbance. Of emotional disturbance in early life I need say but little. We all know that during early life the emotions pass through a somewhat prolonged period of stress and strain—the *Sturm and Drang* of Goethe is particularly applicable to the promising bud of adolescence and the opening flower of adult existence. But, in addition to some of the ordinary emotional disturbances which are particularly confined to that period of life, we have also others, such as anger,—assuredly one of the most powerful factors in inducing an attack of this kind; many other emotional disorders are likewise powerful in the causation of palpitation. One particular nervous condition is very commonly attended by a feeling of palpitation, *i.e.* hysteria; it is, however, necessary to point out that there is such a symptom as hysterical palpitation, so called, which is not to be discovered objectively by physical examination. Clifford Allbutt, in his most interesting and picturesque Goulstonian Lectures, did well to draw the attention of the medical profession to the fact of "palpitation which is never perceived by the stethoscope."[1] In cases of hysteria it has been a common custom to speak of pseudo-angina pectoris, or false angina pectoris; good reasons were assigned in my first series of lectures for the belief that any one who persists in perpetrating such a phrase is guilty of an absurdity, and is wanting in common sense. We might speak with less inaccuracy of pseudo-palpitation than of pseudo-angina pectoris. Far be it from me to employ the one term or the other; both are ridiculous and absurd, but it is a greater error to use the phrase pseudo-angina pectoris, than it would be to coin that of pseudo-palpitation. This, then, is a direct cause, the hysterical condition, whatever that may be, of a sensation of palpitation. To any one desirous of reading some interesting observations on hysterical vagus neuroses, the work of von Noorden[2] may be confidently recommended.[3] The converse of the picture, or a hysterical manifestation of cardiac origin, is very rare indeed.

Of a direct influence upon the vagus mechanism exerted by some gross cerebral lesion, we do not, although cases of the kind occasionally occur, know so much. Such gross lesions are more likely to produce simple bradycardia or simple tachycardia. Consideration of this fact is enough to cause a suspicion, if not more, that in palpitation there must be an exaltation of the augmentor, with a depression of the inhibitory, nerves. Reflex disturbances of every kind may produce palpitation. Such disturbances may arise from viscera not only directly connected with the vagus nerve, but from organs only indirectly connected with it, and situated in more distant parts of the body—*e.g.*, kidney, ovary, or uterus. It is common, however, to find that palpitation is more dependent upon such states as disordered gastric digestion or biliary irritation, changes which obviously are directly connected with the vagus system. Conditions of weakness of the myocardium, in the next place, may lead to palpitation, not only because they beget an irritable state of the heart muscle itself, but also because they produce a state of instability in the nervous mechanism of the heart. In this category must be placed all acute or chronic affections which impair the integrity of the myocardium. In this connection it is once more incumbent upon me again to mention the different toxic influences—microbic and chemical. It is very common to find that some of the poisons of the acute infective diseases leave behind a great tendency to palpitation, partly from weakness, but partly because they have really poisoned the nervous control over the heart. Here, it need hardly be said, are again our three old friends, alcohol, tea, and tobacco. It is unnecessary to say much about these three poisons, seeing we considered their action when we last met; their influence in producing palpitation is absolutely analogous to their action producing a simple acceleration of rate. Then, lastly, amongst the causes of palpitation are all kinds of physical stress. Amongst soldiers, especially young soldiers, it has been recognised since the well-known observations of Clifford Allbutt,[1] Myers,[2] Da Costa,[3] Seitz,[4] and Fräntzel.[5] Another cause was written about not very long ago, by Cocking of Sheffield, in a paper which was contributed by Snell,[6]—a paper which referred to the effects of occupation on miners. Cocking's contribution was in regard to some of the disturbances of the heart's action found in miners. We frequently, in the wards of the Royal Infirmary, where we have coal miners from Fife and Lanarkshire, find in those patients that palpitation is a prominent symptom. Even within the last few weeks an interesting case of this kind was in my ward. In such cases as these we are left to consider that very likely the particular stress is brought about by the patient lying for hours together upon one side, very commonly the left side, to leave the right arm free, and using a pick all these hours in order to get the coal out of the seam. In this place it may not be out of place to recall the fact that excessive physical stress is frequently associated with other causes of disturbance—in short, the patient is often found to have been a worshipper at the shrines so quaintly mentioned by Lancisi.[1]

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[1] "On Visceral Neuroses," 1884, p. 21.

[2] *Charité-Ann.*, Berlin, 1893, S. 249.

[3] Since the delivery of these lectures, Huchard (*Journal des Practiciens*, 1903, p. 276) has wisely pointed out the possibility of error in considering cases of epilepsy and hysteria to be of cardiac origin, when the fact may be that the circulatory and nervous symptoms are only fortuitously connected.

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[1] *St. George's Hosp. Rep.*, London, 1870, p. 23.

[2] "Diseases of the Heart among Soldiers," 1870, p. 22.

[3] *Am. Journ. Med. Sc.*, Phila., 1871, p. 17.

[4] *Deutsches Arch. f. klin. Med.*, Leipzig, 1873, S. 485, and 1874, S. 143, 279, 433, 583.

[5] "Die idiopathische Herzvergrösserung," 1889, S. 3.

[6] *Trans. Sanitary Institute*, 1895, p. 105.

Palpitation is, then, a greatly increased force of the action of the heart of which the sufferer is conscious. The question next arises, How does it come on, and under what circumstances is it found? Here many points are inexplicable. It occasionally occurs in the middle of some violent exertion. It more commonly arises during some profound emotional disturbance. There are probably few of us of the sterner sex here to-day who have not known the discomfort of having to deliver an after-dinner oration—who have not risen to our feet with the sensation as if the heart were in the neighbourhood of the throat, rendering any oratorical effort a practical impossibility. Such emotional disturbance often brings it on. But there is another side to this picture: it is not uncommon to find a patient, who has practically been living a quiet life in all respects, waking up in the middle of the night with a painful attack of palpitation. Sometimes we find that the dietetic errors, so graphically portrayed by Sydney Smith,[2] have been the root of this mischief, but sometimes there are absolutely no such eccentricities—no defiance of digestive functions—and the unfortunate sufferer awakes with the sensation of an engine in his interior, with its governors removed, racing to destruction. Such conditions as these are probably to be explained in this way, that during sleep, when we know the wheels of being move slowly, the nervous system is reduced below its ordinary standard, and the vagus control, intrinsically weak in such cases, falls below the level that is necessary to keep the heart within due bounds even during the period of sleep. This is simply thrown out as a suggestion: there is nothing, so far as is known to me, that will prove or disprove it.

Palpitation, as regards its symptoms, is a conscious sense of discomfort connected with the chest; the prime symptom is really the painful throbbing. It is often attended by a feeling of fulness, as if the chest were possessed of contents far beyond its possibilities, and there is very frequently with that a sensation of tightness, of constriction, and even occasionally of soreness radiating upwards, particularly to the left shoulder. Along with this, some of the symptoms which are common in hysteria are not infrequently found here—sensation of a globus, a ball rolling up towards the throat and threatening to choke the individual. In addition to such features, there is very often a feeling of anxiety, together with singing in the ears, flashes of light before the eyes, deep sighing respiration, and occasionally giddiness, which renders it impossible for the patient to keep his ground. Many of these sensations are graphically depicted by the master hand of Rousseau.[1] On objective examination, there is very greatly increased force, as well as rate, of the heart's action. Sometimes in cases of palpitation that we are called in to see, we can make out the heart's sounds at some distance from the chest without a stethoscope.

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[1] "De Motu Cordis et Aneurysmatibus," Lugd. Batav., 1740, p. 256. It may be well to give the picturesque imagery: "Venditor Piscarius annorum 45, habitus carnosi vitæ omnino libertinæ Baccho nimirum, Dianæ, Neptuno, ac Veneri frequenter indulgens, ex qua postrema pluries contraxit luis stigmata, quæ fere incurata suis confisus viribus imprudentissime contempsit."

[2] "Memoir of the Rev. Sydney Smith," by Lady Holland, London, 1855, vol. i. p. 125.

With such varying symptoms and different causation, the treatment of palpitation must be conducted upon somewhat diverse lines,—the cause must be ascertained, and if possible it must be removed. When it consists in simple gastric disturbance, nothing is easier than to get rid of the palpitation by correcting the irritation, whether it be a simple gastric catarrh or one of the secretory affections of the stomach that modern medicine has analysed with patience and success. These must be, in the first place, corrected, but at the same time it is necessary to lessen the afferent impulses passing up by the vagus channel, and to brace up the whole nervous system in every way. The one combination of drugs which is always found to be most useful for such a condition as this, in addition to our rhubarb, soda, and bismuth, consists in strychnine with hydrobromic acid. The acid is much more useful than any other form of bromine, such as we so commonly use in the bromides. But this is only to touch upon the fringe of the subject. If there be another reflex cause, such as undue mobility of the kidneys—a common cause of palpitation —then the viscus which is at fault must be put back in its right place by one measure or another. If it is from some more distant organ, the disturbance must likewise be found out and corrected. If there should happen to be a weakness of the heart as well as of the nervous system, the heart must be toned up, and I need hardly say that strophanthus, digitalis, nux vomica, and iron are the most important remedies for the purpose. When we come face to face with alcohol, tea, and tobacco, we must proceed exactly as we saw it is necessary to do in regard to irregularity, we must cut them off altogether if possible, or as nearly so as may be practicable. For the palpitation arising from alcohol, digitalis and strophanthus are sovereign remedies, with the usual regulations as to rest and diet. For that induced by excess in tea, these drugs are also useful, but not so effectual as in the case of alcohol; they are only of doubtful advantage. And for these last two strychnine stands far ahead in value of either digitalis or strophanthus. And then, lastly, when physical stress leading to strain has set up palpitation, necessarily a prolonged period of rest is required.

Turning, in the next place, to tremor, it must be stated to be quite a different condition from palpitation. This is not usually an affection of young persons. It is much more common in the middle of life, and sometimes lasts for a very considerable time afterwards. To this sensation of trembling in the chest various literary men have given a good deal of prominence. It is spoken of, for example, by Sir Walter Scott;[1] and many other literary men have adverted to the extreme discomfort of this trembling action of the heart. There can be no doubt that Balfour[2] is in accord with usual experience when he says that he has never once, in the course of his existence, come across a tremor of the heart produced by emotional disturbance. Since he published his work on "The Senile Heart," about eight years ago, this point has been watched by me, and my own experience leads me to coincide entirely with him. When thinking over the matter last night, and looking over notes upon the subject, no case presented itself in which tremor cordis had come on as the result of emotional disorder. It is, nevertheless, essentially due to a loss of vagus control. It is produced by nervous disturbance without doubt, but not by psychical excitement. It is at times induced reflexly, it is sometimes caused directly through nervous affections, but it is far more commonly the result of those debilitated and degenerative conditions of the heart muscle to which middle life is prone. Like palpitation to some extent, it nevertheless produces symptoms quite different from palpitation. In palpitation the heart goes on throbbing violently, shaking the patient, sometimes shaking the bed, but here a quite different state of matters prevails. The individual affected feels as if he had a timid bird fluttering within the bosom. That is the kind of sensation to which many of us in middle age are not altogether strangers. This weak fluttering or feeble trembling of the heart is often attended by another most disagreeable sensation—a sensation as if the heart stopped and might not recommence its action again; it is therefore by no means uncommon for those who suffer from it to pass into a condition of considerable mental distress. There is in most instances a good deal of anxiety attendant upon it. There is sometimes a considerable tendency to faintness, giddiness, and some of those other disturbances so common in palpitation. With these nervous accompaniments, moreover, there is a great tendency to deep breathing; profound suspirious respiration is one of the external evidences of the condition. On physical examination in cases manifesting the symptoms of tremor cordis, there is an irregular feeble fluttering action of the heart, which may be made out by the hand as well as the ear; an irregular feeble fluttering action, rising and falling in its intensity, sometimes more and sometimes less obvious to the observer, while the patient often shows some mental apprehension in his face. We are not to regard the condition as by any means a symptom of great danger. Many men begin to suffer from it in the fourth or fifth decade of life, and the symptom pursues them continuously or intermittently until the termination of a good long life many years afterwards. It certainly was so in the case of Sir Walter Scott; it has been so in the case of many lesser men since his day. The condition is to be relieved by bracing up the muscular substance of the heart, by getting rid of any depressing cause that may be present, and in this twofold manner the trembling may be led to disappear altogether.

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[1] "Confessions," book vi. pp. 82 and 113, London, 1897.

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[1] "Journal," Edinburgh, 1890, vol. i. p. 153.

[2] "The Senile Heart," London, 1894, p. 68.

Syncope, or fainting, has been known since the days of Seneca, who, in one of his letters to Lucilius,[1] speaks of the disagreeable feeling it produces. It also has received adequate treatment at the hands of many brilliant litterateurs, and it is well to mention, as one giving a very excellent description of it, that old cynic Montaigne; in one of the essays in the second book he gives a dramatic narration of his own sensations as he passed into a condition of syncope and emerged out of it again—the attack being induced by an accident. Syncope is most common amongst women, amongst patients of a nervous temperament, amongst those who are anæmic or who are feeble from any debilitating affection; but its proximate cause, its determining factor, is not infrequently some emotional disturbance. Hearing some gruesome tale, seeing some ghastly sight, or even the remembrance of something of the kind, may precipitate an attack. The senses of smell and taste may likewise induce attacks. These are direct factors, and we shall see that this category of causation comes up again before us in a few minutes in considering asystole. Reflex influences also lead to fainting; all kinds of disturbances of the internal organs, such as the passage of a biliary or of a renal calculus, in short, any painful impression conveyed upwards, may be the reflex cause of faintness. It may be produced also by a direct loss of blood, which lessens the power of the heart muscle, and also reduces the stimulus to contraction by diminishing the contents so that it fails to respond. It need hardly be added that a bloodless condition of the brain also brings the depressor mechanism into play. The symptoms produced are a feeling of faintness in the first instance, a sensation of uncertainty often with giddiness, an impression of objects being indistinct and sounds distant, with a state of mental confusion which, if we are to trust Montaigne,[2] is very far from being disagreeable. The words of the essayist would lead one who has never himself yet had the experience of fainting, to believe that the process on the whole is not an unpleasant one. Walshe,[1] who expands this idea in one of his most eloquent chapters, speaks of it as being much more likely to be attended by pleasurable than by painful sensations.

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[1] "Opera," Basileæ, 1529, p. 126.

[2] The words of Montaigne may be given in full: "Il me sembloit que ma vie ne me tenoit plus qu'au bout des levres ; ie fermoy les yeulx pour ayder, ce me sembloit, à la poulser hors, et prenoy plaisir à m'alanguir et à me laisser aller, C'estoit une imagination qui ne faisoit que nager superficiellement en mon ame. aussi tendre et aussi foible que tout le reste ; mais, à la verité, non seulement exempte de desplaisir, aius meslee à cette douleur que sentent ceulx qui se laissent glisser au sommeil."—"Essais," Livre II. chap. vi. p. 391. Edition Firmin-Didot, 1882.

The objective appearances are those of pallor, with a sharp or pinched condition of the features, and dilatation of the pupils, coldness of the surface, and diminution of respiration. It need hardly be added that on closer scrutiny the heart beat is feeble and flickering, and the pulsations in the arteries are often practically non-existent. It is probable that the heart, during syncope, is not at rest, but has the fibrillary movements to be described in asystole. Such is the condition of syncope. It is obviously brought about by exactly the opposite set of conditions to those which produce palpitation; the impulse comes down the inhibitory nerve, whether as the result of depressing influences sent up, or of direct influences upon the centre, as the result of which impulses passing downwards cause inhibition.

It is to be treated by putting the patient in such a condition as will allow gravitation to aid the return of blood to the heart, and increase the difficulty of sending the blood from the heart, so as to augment the normal stimulus to the auricles, which will lead them to a resumption of their ordinary rhythmic contraction. It need hardly be added, that if there should happen to be any prolonged syncope, such as might be dangerous to the further existence of life, it is necessary, by means of appropriate stimuli to the surface and to the special senses, by the use of injections of such substances as ether, and by the passage of a galvanic—not a faradic—current, to penetrate through the tissues if possible, and act directly upon the cardiac nervous mechanism. These are the appropriate means by which syncope is to be relieved. As to minimising any tendency to it, this can best be done by stimulating and increasing the tone of the whole nervous system, and further by increasing the nutrition of the cardiac muscle.

We now come, in the last place, to the final subject with which we have to deal, that is, to the subject of asystole. For a good many years most of the works which bear upon sudden death—from the earlier work of Lancisi,[2] down to the monumental work of Browardel[3] in the last decade of last century—have been familiar to me. In all these works we fail to get an adequate presentment of the reasons why a patient dies suddenly of heart disease. MacWilliam, to whose excellent work it has been my duty to pay a very well-merited tribute, has put matters very clearly as regards the mode of death in asystole.[4] Let me premise that there can be no doubt that Stokes[1] was perfectly right in his protest against the popular conception that sudden death is very common in heart disease. He has been abundantly justified, because we now recognise that sudden death is not of extreme frequency in such affections. One or two special diseases are, as we know, prone to sudden dissolution, but these form a great exception to the vast mass of cases of heart disease. And, as we grow older, our prognosis in cardiac affections—although it will probably remain for a long time one of the opprobria of practical medicine—this prognosis, as we grow older, becomes without doubt rather more hopeful than when we start out upon our life work as physicians. Well, according to MacWilliam, when asystole occurs, the heart does not suddenly stop beating, but is thrown into a series of fibrillary contractions—weak, purposeless vermicular movements, instead of co-ordinate movements of the mass of auricle or ventricle such as occur under healthy circumstances. The work referred to sets beyond all possibility of doubt that this is the normal way in which the heart ceases its activity. MacWilliam shows us that different animals have various tendencies in this respect. Lower animals amongst the mammalia, such as the rat or the hedgehog, may show this condition of fibrillation of the muscle for a few hours, after which a perfectly healthy heart beat is resumed. But in the higher animals, such as the cat and the dog, this is not possible; a comparatively short interval of time after such a fibrillation has been started in the heart, it is no longer possible to bring it back to its normal healthy activity. MacWilliam believes this to be probably the state of matters which occurs when the human heart also fails, even when the end comes suddenly. It is known from the observations of prison physicians that when a man has been hanged his heart does not stop instantly with the crushing of his medulla oblongata; it goes on beating sometimes for twenty minutes in a feeble and irregular fashion, and finally flickers out. We may take it that this, occurring as it does for the most part in a strong, healthy man, is an expression of that fibrillary or vermicular action. Now, in the human being, such a condition as this may be brought about by a variety of different causes. It may be sudden or ingravescent. It may be produced by profound mental disturbance. All of us are conversant with the story of the French king who, for some error on the part of his jester, held a mock trial, when he was condemned to death. A masked headsman and a block in solemn black were introduced. The jester was made to kneel at the block, but instead of beheading him the executioner simply sprinkled a few drops of water on the back of his neck, and the whole Court, thinking this an excellent jest, broke into a fit of laughter. To the consternation of all, however, the jester never moved a muscle, because he was as dead as Julius Cæsar. This is a well-known historical instance of profound emotional disturbance terminating the existence of an individual who apparently was in perfect health. It is a very curious circumstance that extremely joyful emotions are almost as serious, or, as is sometimes stated, even graver, in their effects in this way than those which are profoundly depressing.[1]

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[1] "Diseases of the Heart and Great Vessels," fourth ed., 1878, p. 189.

[2] "De Subitaneis mortibus libri duo," Romæ, 1709.

[3] "La mort et la mort subite," Paris, 1895.

[4] *Brit. Med. Journ.*, London, 1889, vol. i. p. 6.

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[1] *Op. cit.*, p. 133.

Other causes than emotional disturbances are reflex influences acting upon an enfeebled circulation. The profound impression produced by the passage of gall stones, in a patient with a feeble heart, has been reported from time to time as the cause of death, and similar other visceral disturbances may bring about reflex results equally disastrous. Then a direct result upon the vagus nerve may at once stop all further pulsations of the heart. The Valsalva experiment, of trying to expire deeply with the nose tightly held and the mouth closely shut, has been known to lead directly to death by pressing upon the heart, and it may be added that one of the not infrequent modes of death that physicians meet with is in patients with weak hearts and emphysema, along with dilated stomachs, in which the heart is subjected to pressure both from below and from above, and is quickly brought into a condition of standstill. There are, besides, a large number of causes in the heart itself. There are such modes of death as sudden occlusion of the coronary vessels, rupture of the wall of the heart, and the sudden effect which may be produced upon it by direct violence. These are all factors which may lead to this condition of asystole. It seems to me that it cannot be any longer doubted that the explanation given by MacWilliam is the correct one as to the mode of operation of these causes.

When we see any one who obviously is standing within the shadow of death from threatened asystole, what are we to do to avert the impending disaster? We must remove as far as possible all the causes which may be depressing to the action of the heart; we must relieve the stress and consequent strain to which the heart is subjected directly or indirectly; every means by which the action of the vagus nerve will be abrogated should be employed, so that there shall be no interference of the regulating mechanism, and we must also use such drugs as we know to be powerful agents in bringing about a return of the contractile force. In cases of heart disease, we often encounter a combination of circumstances leading to asystole, and we frequently have the intense satisfaction of warding off an alarming attack of the kind and seeing the patient restored to comparative health even for years. This is especially the case in varieties of valvular affections in which the mitral cusps are affected. One very obvious cause, increased pressure within the arterial system, we can always remove by the use of the iodides, or by the use of the nitrites; and by removing this resistance to the circulation, we can thereby aid the heart in keeping up the circulation and in losing the tendency to this fibrillation. At the same time, by the use of the cardiac tonics, along with the alteratives and vascular dilators, we achieve a double purpose.

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[1] On the conclusion of this lecture, the chairman kindly recalled to my recollection that a similar episode had occurred in Edinburgh. One of the servitors of the University had made himself obnoxious to the medical undergraduates, and was consequently arraigned before a mock tribunal and condemned to death. With every circumstance of the solemnity befitting the occasion, the servitor was brought to the block, and, almost as in the case of the French jester, was gently flicked on the back of the neck with a wet towel. A similar tragic termination occurred in this instance. The secret was well kept, but some inkling of the facts leaked out, and for long afterwards in the streets of Edinburgh, any youth bearing the semblance of a student used to be greeted by the mob with the grim pleasantry: "Who killed Downie?"

Finally, let me add that in all enfeebled conditions of the heart, such as are so commonly found to underlie the symptoms we have been engaged in considering, careful hygienic and dietetic regulations must be enforced, while periods of rest and exercise should be definitely arranged. One very important matter is the employment of regulated movements of all the skeletal muscles, and in particular of those of the trunk, so as to ensure the thorough action of the respiratory apparatus and the adequate support of the abdominal organs.

In these lectures it has been my aim to be suggestive rather than exhaustive, because in the short space of six lectures upon the nervous affections of the heart it has been impossible to do other. The various points which have been brought before you in these lectures will, it is to be hoped, not be altogether destitute of practical importance, while the scientific interest found in such researches has at least in some measure been laid before you.

REVIEWS OF BRITISH AND FOREIGN LITERATURE.

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Archives of Neurology. Vol. ii. Edited by F. W. Mott, M.D., F.R.S. London: Macmillan & Co. Ltd. 1903.

This volume, the second issued under Dr. Mott's editorship by the Asylum's Committee of the London County Council, amply confirms the hope raised by the appearance of its predecessor, that work of a really valuable kind would result from the establishment of the laboratory at Claybury and the appointment of Dr. Mott as its director. The editor's contributions to the book would of themselves be a satisfactory harvest in return for the money spent on the laboratory, and we feel sure that Sir Wm. Collins, who did so much for its establishment, and who, from his medical knowledge, is able to appreciate the value of the work of which this book is the result, will feel rewarded for his efforts. It is certain that the founding of the Claybury Laboratory and of that of the Scottish Asylums at Edinburgh marks an important epoch in the study of mental disease, and that they are already making their influence felt throughout the whole country.

The volume under notice contains ten papers, chiefly pathological, two being chemical and one psycho-physiological. The first and most valuable is by the editor, on "Tabes in Asylum and Hospital Practice." His unique position gives him special opportunities for studying this disease in its various manifestations, and he has made the very best use of these. His paper embodies an enormous amount of work, both clinical and pathological, and his results are presented in a clear and interesting manner. As is well known, Dr. Mott is a firm believer in the close relation of general paralysis and syphilis, and he now adduces very strong evidence to show a similar relation in the case of tabes, and of the two diseases to each other. He gives statistics of all his cases with respect to this factor, and also discusses the influence of stress, mental worry, heredity, and alcoholism in the production of the disease. He next turns his attention to the physical signs and mental symptoms of tabes and tabo-paralysis. A detailed account is then given of various cases (seventy-four in all), arranged in groups.

A section is devoted to the morbid anatomy and pathology. Interesting and important as this is, and well worthy of very careful study, it must suffice to give his general conclusions. He considers that both the clinical symptoms and the pathological appearances point to an intense irritant morbid process, followed by acute neuronic destruction. The irritant is presumably of a biochemical nature, and produced paroxysmally by a localised conspiracy of factors. The symptoms and appearances all point to the formation in the blood of a toxine, which fixes on to certain portions of the central nervous system, which either stress, heredity, or anatomical conditions place in a lowered state of resistance. Stated in his own words, he thinks "it may be conceived as possible that there is a latent toxine in the blood which combines with endo-complements, the products of deranged neuron activity producing locally an active neurolysin proportional to the amount of latent toxine in the blood, and to the amount of endo-complement produced by deranged neuron metabolism" (p. 304).

The second paper is by Dr. Tredgold on "Amentia." In the first section the causes of amentia are investigated, so far as they can be deduced from the 150 cases, selected out of 1500, which he has very carefully studied, especially in respect of their history. His conclusions are that in 82·5 per cent. there is a hereditary history of insanity, epilepsy, or other nervous abnormality. Alcoholism could be traced in 46·5 per cent., but only in 8 per cent. was this unaccompanied by insane or neuropathic inheritance. In 34 per cent. there was a phthisical history, but in 7·5 per cent. only was there an absence of hereditary nervous abnormality. Syphilis was discovered only in 5·5 per cent., and, in all of these, other factors were also present, such as insanity, alcohol, or phthisis. Of extrinsic causes without hereditary influences epilepsy claimed the greatest number. In the second section a classification of amentia is given. It is based on etiology rather than pathology. There are two groups—(1) Those due to factors within the germ plasm itself as a result of ancestral defects (primary or essential), and (2) those due to factors extraneous to the germ plasm (secondary or accidental). The third section deals with pathology, and it is found that in the end the clinical division corresponds fairly well with the pathological characteristics. His conclusions in the main confirm previous observations. Primary amentia is based on a failure of development of the cortical nerve cells, especially those of the second and third layers, while secondary amentia is due to a degeneration of these nerve cells. The article closes with a detailed account of the clinical features and pathological appearances in twelve cases.

The third paper is on "The Histological Basis of Amentia and Dementia," by Dr. J. Shaw Bolton, but it covers much wider ground than the title indicates. It is based on a study of 200 consecutive cases from the Claybury laboratory, excluding dementia paralytica, though over one hundred cases of this disease were also examimed, and the results are here recorded. His general conclusion is that neuronic insufficiency is the necessary antecedent of mental disease. Stress varying in kind and degree is the determining cause of the time of onset of insanity. Two other factors must also be admitted, namely, vascular disease and syphilis. Space does not permit of further details of this paper. It shows a large amount of industry and careful work, but it is to be regretted that there is no reference in it to the work of others, and that the balance between generalities and details is not well preserved.

Dr. Watson contributes a most interesting paper on "Juvenile General Paralysis." It is the result of an investigation of twelve cases of this disease. His conclusions regarding its etiology confirm those of others who have investigated this matter. In every instance syphilis could definitely be traced. As regards the histology of this disease, he concludes that "a slow atrophic degeneration is the primary and essential change, so far as the nerve cell is concerned, but frequently large numbers of nerve cells are destroyed by a more acute or subacute process." The paper is well worth reading.

Professor Halliburton and Dr. Mott contribute a paper on "The Coagulation Temperature of Cell-Globulin," and show that in all probability the cause of death from hyperpyrexia is a coagulation of this globulin.

Space does not permit of more than an enumeration of the other papers. Dr. Mott draws attention once more to the "Means for Preventing the Spread of Dysentery in Asylums," and also has a short note on the choline test for active degeneration of the nervous system. Dr. G. A. Smith writes on "The Range of Immediate Association and Memory in Normal and Pathological Individuals. Dr. Chas. Bolton describes "The Changes in the Medulla in Acute Diphtheritic Toxæmia," while Dr. Cole contributes "A Study of the Central and Peripheral Nervous System and Muscles in a case of Acute Alcoholic Paralysis with Mental Symptoms."

The whole volume is an evidence of Dr. Mott's own capacity for valuable scientific work, and his ability to direct the work of others. Future volumes will be warmly welcomed if they are up to the standard of those already published. JAS. MIDDLEMASS.

The Elements of Pathological Anatomy and Histology. By W. S. LAZARUS-BARLOW, B.A., M.D. London: J. & A. Churchill. 1903.

THOSE who are familiar with Dr. Lazarus-Barlow's book on general pathology, will look with much interest to this new work which has come from his pen, and which may be considered as supplementing the earlier volume. Having already, in the latter, dealt with the physiological aspects of pathology, the author now turns to consider the science from the point of view of morbid anatomy,—naked-eye and microscopic. There is room for considerable difference of opinion as to whether or no this method of treating the subject, as compared with that which deals with both aspects together, is that to be preferred in the teaching of the subject. It might be urged that anatomical details gain greater interest when they are considered in relation to the etiology of the disease of which they are the evidence, and to the disturbances of normal function with which they are associated. But this by the way. The volume before us is divided into two parts. The first of these deals with general pathological anatomy and histology, the second with the anatomical changes found in special organs and tissues. In the former will be found the consideration of such processes as cellular degenerations, inflammation and its results, chronic fibroses, thrombosis and embolism, and new growths. In the case of most of these a very adequate treatment of the subject will be found. The section on local death might perhaps have been amplified, as this is a subject the student has often great difficulty in comprehending, the relations of necrotic processes as causal factors in subsequent abscess formation, or in the development of ulceration being especially troublesome. Ulceration, it may be remarked, is in this volume dealt with rather too exclusively in its histological relationships to suppuration. Here also we think it would have been better not to have considered the morbid anatomy of congestion and œdema in the section dealing with inflammation, as, after all, they have only to do with certain stages of the inflammatory process. In connection with inflammation, attention may be directed to an excellent section on the question of regeneration. In dealing with tumours, the author adopts a classification based on innocency and malignancy in relation to the epithelial and connective-tissue groups, and proceeds to take up and describe *seriatim* the leading forms of new growth, in a way which will be of great use not only to the student but to the advanced worker; and further, this section of the book is furnished with most excellent illustrations. In the special part of the book the various systems of the body are taken up in turn. The first subject treated of is the morbid anatomy of the blood, and here, perhaps more than in any other part of the work, is the disadvantage of the treatment of morbid changes apart from etiology apparent. But besides this, we cannot agree with the author in his classification of the atypical cells found in the blood in disease,—a classification which apparently omits all reference to the finely granular myelocytes, and places in somewhat undue prominence the hyaline and mast cells. We further think it unfortunate that blood diseases should be divided into anæmias without leucocytic change, and those with leucocytic change,—the latter including leukæmia. For one thing, such a classification is rather apt to set in the background the probable entirely secondary character of the anæmia in the last-named disease. Of the sections in this part of the book to which special attention may be directed, are those relating to diseases of the heart, of bones, of the skin, and of the lungs, the latter being especially good.

The book is intended for students, and to these it may be recommended as one of the best treatises on morbid anatomy which has recently appeared. In places the advanced student might desire amplification, but this fault is readily condoned as it proceeds from what is the outstanding merit of the book, namely, that it is the product to a very large extent of the personal observations of the author. In conclusion, we may say that the volume is illustrated by a number of drawings, which are often excellent, though in parts of rather unequal merit, and we are not sure that in many instances micro-photography might not have been with advantage utilised, even in spite of the limitations which in the author's opinion it exhibits.

JAMES RITCHIE, Oxford.

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1. *The Prize Essay on the Erection of the King's Sanatorium for Consumption.* By ARTHUR LATHAM, in association with A. WILLIAM WEST. London: Baillière, Tindall, & Cox.
2. *Pulmonary Consumption.* By ARTHUR LATHAM. London: Baillière, Tindall, & Cox.

FEW things have been more remarkable in medical literature than the enormous number of books which the subject of pulmonary consumption has called forth during the past five years.

For the appearance of the last two of their number Dr. P. W. Latham is primarily responsible. The former of these sets forth, along with illustrative plans and a number of useful appendices, the Essay which won for its authors the King's Prize of five hundred guineas and a certain title to renown. It discusses with commendable fullness and care those essential principles which underlie successful treatment by open-air methods, and sketches an architectural plan which, it is claimed, enables those principles to be conveniently carried out. To public bodies and others, whom the erection of sanatoria may concern, the book, which is certainly the best upon the subject which the market contains, will prove invaluable.

In the latter, entitled "Pulmonary Consumption," the author again claims our attention. In speaking of this work, it is well at the outset to state that it contains practically nothing of the writer's own. The work is not original, and in no sense is it a contribution to our knowledge of pulmonary consumption, its nature, or treatment. On the contrary, it is a pure compilation; but, as a compilation, it is only just to state that it is a good one. Almost every available source of information having been laid under contribution to supply material, readers will not be surprised to learn that the work which the writer has succeeded in furnishing us with, contains a thoroughly reliable and up-to-date statement of the state of our knowledge on the treatment of pulmonary consumption, so far as it is at present known to exist.

Starting with an extremely cursory reference to its pathology, the writer plunges *in medias res*, by at once discussing the diagnosis of the disease. He then passes in review open-air methods of treatment as carried out respectively in sanatorial and in home surroundings, in course of which he deals at some length with the subject of "avoidance of re-infection," and concludes with a historical résumé of the multitudinous varieties of treatment which have successively held the field from the time of Pliny down to the present day.

In considering the difficulties attending the diagnosis of early cases, the writer might with advantage have dispensed with all reference to points of so dubious value as the presence of pityriasis versicolor and lanugo-like appearance of the skin, the detection of bacilli in the fæces, or their presence in the peripheral circulation, especially if by so doing he could have found room to touch upon the relatively more important facts to be obtained by the Ausculo percussion method of examination, the value of force respiration and cough in revealing evidence of moisture in the alveoli, which pass unrecognised in ordinary breathing; examination of the axillary glands, and more especially the several varieties of tone and pitch of pectoriloquy (articulate and inarticulate type) to be heard in the suspected area,—all of which have been omitted. The effect of exercise upon temperature as an element in diagnosis is referred to, but does not receive nearly so full consideration as its importance demands. Again, when he refers to tuberculin, even although Osler is quoted in support of his view, one hardly feels that the writer has succeeded in establishing the desirability of resuscitating the routine injection of Koch's old tuberculin for diagnostic purposes. And similarly, the importance of the presence of Overend's venous radicles as a point in diagnosis has been over-estimated. It is when he passes on to deal with the assistance to be derived from the employment of X-rays that the writer finds himself on less contentious ground. But here again one feels one has a right to expect fuller information than has been supplied. One takes exception to the absence of all reference to the position of the apex beat, variations in the form and behaviour of the diaphragm on the healthy and affected side respectively, and to the changes in the illumination of the suspected area during respiration, as shown by the screen, to modifications in the position of various ribs, etc. etc.

The chapter devoted to describing open-air treatment as carried out at home is one of the best, and should prove a boon to many physicians who, rather than send their patients away, prefer to retain them under their own personal supervision. But the diets laid down, according to our view, are unnecessarily and unsuitably large. Even although the writer quotes Walther as his authority, for whom he appears to hold a brief, few will be prepared to admit the wisdom, and far less the necessity, for including veal, pork, pastry, and ice-cream in a tuberculous patient's dietary.

The writer is disposed to bestow his benison upon Deboeves' method of feeding by a stomach tube in troublesome cases. Our own experience, drawn from a very large number of cases, is that if these instances are excepted, where vomiting is undoubtedly of neurotic origin, this method absolutely and completely fails to produce any permanent benefit whatever. The value of climate is fully discussed, and the dictum laid down that the patient should seek to be cured in that country in which he must afterwards pass his life. Solly's figures, which show that a mortality from tuberculosis of over 23 per cent. obtains among the Indians residing in the mountains around Colorado, furnish a strong indictment against the claims as to the specific action of any particular climate.

The controversy regarding the identity between bovine and human tuberculosis, with the associated food problem, receives careful consideration, and the facts are clearly and comprehensively stated.

Although the work will not bring to the writer any lasting reputation, still it should prove a welcome addition to the library of many a hard-worked physician, who will find in it a fund of reliable information upon the subject with which it deals.

David Lawson.

Practical Handbook of the Pathology of the Skin: an Introduction to the Histology, Pathology, and Bacteriology of the Skin, with special reference to Technique. By J. H. M. Macleod, M.A., M.D., M.R.C.P. London: H. K. Lewis. 1903.

The terse description of the Odyssey given by Alcidamas—

Τὴν ᾿Οδύσσειαν, καλὸν ανθρωπίνου βίου κάτοπτρον,

is equally applicable to the skin, regarded from the modern pathological point of view. It is, indeed, a wonderful mirror, which reflects a multitude of diseased states, and histologically, it is the most important organ of the body; for from it we can, by means of biopsies, secure for observation portions of tissue actually in the living condition, and so study processes under circumstances impossible in the case of the deeper organs. The pathology of the skin possesses thus surpassing interest, yet there has been hitherto no book, exclusively devoted to this, readily accessible. The monumental work of Unna is at once too elaborate, and too representative of his personal views, to be quite generally useful. Dr. Macleod has seized the opportunity, and in this easily handled volume has presented an admirably balanced compendium of the subject. It is difficult to speak highly enough either of the plan adopted or of the thoroughly workmanlike manner in which he has carried this out. He brings to his task many valuable qualities. First, the power of clear description without any tedious elaboration; thus the picture his words convey is always sharp and well defined. This is again made complete by copious illustrations drawn by himself, and therefore conveying by the visual sense the exact complement of the impression sought to be made by language on the mental one. The skin is studied from without inwards, and all its component parts come under review in due order, primarily in their developmental state, then as they appear in health, and finally as they are altered by disease. Much light is thrown on many obscure points in integumentary pathology, such as the source and significance of mast cells, or the origin of plasma cells, the various ways in which vesicles arise, or the import of eosinophilia. Dr. Macleod follows the commonly expressed view that the normal count of red blood-cells in a healthy adult male is about 5,000,000 per c.mm., and in a female 4,500,000. We are inclined to think this too low an estimate. It may be quite true of the average healthy town-dweller, but would probably be found to be higher if the estimate were made in a really robust country man or woman. Next, the processes best calculated to display the tissue changes are fully detailed, a selection of various methods of staining or manipulation being provided to choose from. The views of investigators, when these clash, are fairly and fully laid down, preference being given to the more probable solution. Nothing seems to have escaped the author's notice, and the treatise will be found invaluable, while being eminently readable, not only to the student, the scientific observer, and the specialist, but to every practitioner of the medical art.

W. ALLAN JAMIESON.

NOTES ON BOOKS.

Clinical Treatises on the Pathology and Therapy of Disorders of Metabolism and Nutrition, by Professor CARL VON NOORDEN, Parts i. and ii., "Obesity," "Nephritis." (New York: E. B. Treat & Co.). The Americans seem to be as up-to-date in translating books written by foreign authorities, as they are in introducing engineering machines for the facilitation of labour. Professor von Noorden is bringing out a series of monographs upon the *Diseases of Metabolism and Nutrition.* Two of these have been published in Germany, the first upon "Obesity," the second upon "Kidney Disease," and already these two have been translated into English in America. The well-known name of von Noorden affords a guarantee of its metabolic excellence, while the translation has been performed in an excellent manner. The two volumes are got up exceedingly neatly, and the printing is all that can be desired.

The following name is rather a contradiction in terms, it is called *First Aid to the Injured and Sick; an Advanced Ambulance Handbook* (Bristol: John Wright & Co.), because, if it is an advanced ambulance handbook, it should surely take up more of the subject than first aid. Drs. Warwick and Tunstall have produced a most elaborate dissertation on "First Aid," commencing with nine chapters in Part i. dealing with anatomy and physiology, freely illustrated with rough but fairly correct drawings. Part ii. is concerned with the immediate treatment of all sorts of accidents. Except that the instructions are fuller, and the number of fearful and wonderful bandagings is greater, we fail to see how the book can be called an advanced handbook. No doubt it is excellent, and contains a lot of information which the laity with some difficulty might be expected to assimilate. If it be assimilated it were well.

A Treatise on Massage, by DOUGLAS GRAHAM, M.D., Boston. Third Edition. (Philadelphia and London: J. B. Lippincott Co. 1902.) This work on massage, which seems to have been the first published upon the subject in the English language, when the first edition was issued in 1884, has now reached a third edition. It is the most comprehensive work upon the subject that we have come across. Commencing with the definition and history of massage, "They be the best physicians which, being learned, incline to the traditions of experience; or, being empirics, incline to the methods of learning," from Bacon, serves as a text of the book. A very full history of the subject, with portraits of the earliest practitioners in the art, commences the volume; then follows a copiously illustrated section devoted to a consideration of modes and physiological effects. Following these more general chapters, almost every special complaint which can possibly be benefited by the treatment is severally discussed. One of the most interesting points of the book really consists in the apt headings drawn from all and sundry, ranging from Burns, Shakespeare, Martial, Phædo; it would not be right to quote the same here, and the book itself should be consulted for them, and at the same time for the excellent descriptions, and advice as to massage contained within its pages.

Elements of Pharmacy, Materia Medica, and Therapeutics, by William Whitla, M.A., M.D., etc. Eighth Edition. (London: Henry Renshaw, 1903). The eighth edition of Dr. Whitla's *Treatise upon Pharmacy and Materia Medica* forms practically a new book, for it is printed in a larger page, making it a companion to the author's *Dictionary of Treatment*, while much of it has been re-written, and all of it brought up to date. Perhaps the most valuable part consists in that which is devoted to the consideration of non-official remedies. Too often books upon materia medica severely restrict themselves to the consideration only of official pharmacopœial drugs; although a number of medicaments furth of the official list may without exaggeration be said to have as much if not more value. In its new form Whitla's Materia Medica can be more than ever recommended for the use of students.

There is little more that we can say about the last issue of *The Medical Annual* (Bristol: John Wright & Co., 1903), than to note its continued excellence in every way. It remains one of the best books of reference for the general profession which we have.

In a book by Dr. Howell T. Pershing, the student of medicine or the practitioner may find a very well-arranged compendium of the diagnostic points of nervous and mental diseases (London: Rebman Ltd.), although, save for arrangement, there is little original about it.

Ophthalmic Nursing, by Sydney Stephenson (London: Scientific Press), has reached a second edition, and does not differ much from the first. After a description of the eye and its functions, a chapter on the germ theory of disease is introduced, for the sake of the nurses we suppose, while the rest of the book takes up the various diseases and operations connected with the eye, and how properly to look after them.

General Paresis, Practical and Clinical, by Robert Howland Chase, M.A., M.D. (London: Rebman Ltd., 1903). This is a book dealing very fully with the symptoms and treatment of general paresis, or, as it is more commonly called in this country, general paralysis. The letterpress deals with the subject as it is met with in America, and indeed the American general paralytics seem to be a caution. The book is beautifully illustrated with photographs of patients, while some of the prettiest plates come from workers in our own city.

Volume IV. of the twelfth series of *International Clinics* (London: Lippincott Co., 1903) contains several very interesting papers, and is as usual beautifully printed and illustrated, some of the photographs, indeed, being perfect. One of the most interesting papers in the volume is that by Dr. Stern upon Chronic Gastric Catarrh, although his nomenclature is somewhat peculiar, and the representations of stomach washing rather spectral.

RECENT ADVANCES IN MEDICAL SCIENCE.

MEDICINE.

UNDER THE CHARGE OF

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HEREDITARY JAUNDICE.

PICK (*Wien. klin. Wchnschr.*, April 23, 1903) retails some interesting histories of several members of one family, all of whom were afflicted with hereditary jaundice. The first case was that of a soldier, who went into hospital last November. From his youth he had always been jaundiced. His mother, who had died in her 35th year a few hours after her tenth confinement, had also been jaundiced since birth. A 17-year-old brother and a 26-year-old sister of the patient had also been jaundiced since birth. Two other sisters were alive, healthy, and had never been jaundiced. The father occasionally suffered from epileptic fits. The patient himself had always all his life suffered from a weak stomach, fatty food and meat had been especially badly borne, while, on the other hand, vegetables were always well digested. For some time he had suffered from pain in the right hypochondrium, from loss of appetite, and now and then from vomiting of mucus. He had suffered from no other disease.

Present condition.—The patient was strongly built, muscles well developed and covered with a good layer of fat. The skin, as well as the sclerotic, were of a yellow colour. The pulse 60, slow. The liver, somewhat tender. The urine, yellow, brown, rather muddy; specific gravity, 1017; slightly acid; bile pigments not detectable. Urobilin in excess; indican increased. Slight traces of albumin and of nucleo-albumin. A few oxalate crystals. Blood examination normal; stomach contents ditto.

The 17-year-old brother of the patient gave, under examination, almost exactly the same symptoms, as also the 26-year-old sister. Both of them from their childhood upwards had been unable to eat pork or fat bacon without suffering for it.

Consideration of the three cases shows several points of special clinical interest, *i.e.* (1) The fact that the jaundice in all the three cases, as well as in the mother, commenced with birth, that is congenital; (2) that the disease affected the mother and three children, while other children in the same family remained free from the disease; (3) that in all three cases there was a distinct yellow coloration of the skin and of the conjunctiva present, although in all of them there was no bile pigment or bile acid in the urine, and the fæces were of normal colour. Pick proceeds now to quote several cases from medical literature—one from Dr. Harley, observed in the Edinburgh Maternity Hospital, from Moxon, Glaister, and other authors, in which the symptoms closely approximated to those of his own cases. The writer comes to the conclusion that these instances of hereditary jaundice are not due, as Harley, Moxon, and other English authorities have advanced, to narrowing of the common bile duct, but rather to some congenital communication between the lymph ducts and the biliary ducts, or to some congenital insufficiency of the liver cells.

UNUSUAL CASES OF MEASLES.

BURGESS (*Dublin Journ. Med. Sc.*, April 1903) gives notes of a peculiar case of measles in a married lady, æt. 30, who had nursed two of her children through sharp attacks of the same disease. She already had had a severe attack of measles during her schooldays. On examination when she first complained of illness, her temperature was 102°·5 F., her pulse rapid, but her palate presented no Koplik's spots. The tonsils were swollen and ulcerated. Also constant vomiting, dry cough, great restlessness, and complete loss of sleep. Two days afterwards the measles rash had appeared faintly at the angles of the mouth, the temperature 104°. The other symptoms as before.

Four days after the rash appeared there was complete suppression of urine, and the bladder was found to be empty on the passage of a catheter. A diuretic mixture, containing nitrate of potassium, caused the re-establishment of the urinary function during the same day. Next day, however, the suppression of urine returned. Later on, about half a pint of smoky urine was passed, but instead of improving, her temperature rose to almost 106°, the pulse galloping, and the patient in a condition of stupor. She was placed in a hot pack, and given 15-gr. doses of benzoate of soda. From this time all the untoward symptoms gradually disappeared.

This case was somewhat peculiar for the following:—"(1) The prevalence of scarlatina symptoms in the course of a case of measles, although the rash as it came out was undoubtedly measly, yet the inflamed throat, ulcerated tonsils, the continued vomiting, the kidney phenomena, and, later on, the coarse desquamation, would collectively make me doubt my own diagnosis, were it not corroborated by physicians of such experience as Sir Francis Cruise and Sir John Moore. I may here mention, parenthetically, the same symptom of vomiting throughout the attack was also present in the cases of both children, in whom the other appearances left no doubt whatever of the nature of the disease. This symptom persistently occurring during an attack of measles I have never seen before, nor can I find any reference to it in the text-books. (2) The rash came out very slowly, and did not extend to the feet until the third day. Its character was petechial; as I mentioned before, its colour was deep brown. (3) The renal complication, which is most rare in measles. According to Professor Nothnagel's book, only two cases are recorded by Henoch. The urine after the period of suppression was for a long time scanty, not exceeding 30 oz. in the twenty-four hours; was smoky, contained phosphates; at a later date, abundant urates; but at no time could we find albumin. That which was voided immediately after the suppression contained 10-gr. solids to 1 oz. (4) The rapid cardiac action, without pulmonary complications, pointed to the toxic forms of measles alluded to by Allchin. (5) The spasmodic cough, resembling pertussis, which followed the acute stage, and persisted during convalescence—a constant feature in my experience in the last epidemic. (6) The continual insomnia and restlessness, over which none of the drugs employed seemed to have the very slightest power. The following were tried, singly and combined:—Opium before the renal symptoms occurred, chloral-sulphonal, the bromides. (7) The high range of temperature culminating in hyperpyrexia, terminating by protracted lysis. The latter is a condition found frequently associated with measles. In the treatment two things appeared to do good—the internal administration of benzoate of sodium, which stimulated the renal function; and probably the hot pack, which warded off uræmia and cardiac failure from the high temperature."

Machold (*München. med. Wchnschr.*, April 14, 1903) also describes a peculiar case of measles. The patient was a girl, æt. 8, and the doctor was sent for with the message that she was blue all over, or, as her mother described it, "as if she had been dyed from her stockings." When seen, all over the body there were bright purple marks about the size of a shilling, of irregular form, more or less circular. Both feet, the right rather more than the left, were of a bright blue colour. On the abdomen were several small patches about the size of a sixpence, each of which were coloured bright blood red. There was some slight bronchitis present, and the spleen could be felt; the temperature was not much raised. The patient had already passed through an attack of measles, followed by distinct bran-like desquamation. On the fifth day branny desquamation followed her second attack, which Machold looks upon as proof positive of the disease having been a second onset of morbilli.

SURGERY.

UNDER THE CHARGE OF

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UNUSUAL CASE OF FRAGILITAS OSSIUM.

BIGGS (*Univ. Penn. Med. Bull.*, Feb. 1903) reports a remarkable case of osteopsathyrosis, or fragilitas ossium, the patient having sustained twenty-two fractures within a period of ten years. The case is exceptional, in that the disease first manifested itself when the patient—a male—was 20 years of age, and that, after persisting for ten years, it appears to have been recovered from. There was no family history of fragilitas ossium, and none of the usual predisposing causes of the disease were present. The patient denied having suffered from syphilis. He was never exposed by occupation or otherwise to metallic or drug intoxication. While apparently in good health, at the age of 20 (July 1887), he sustained a fracture of the right humerus in lifting a box from his shoulder. It took several months to unite completely. Later in the same year he fractured the left humerus by a trivial injury. In January 1888 he fell on the ice and fractured the shaft of the right femur. In May he fell on the ward floor and fractured the left femur and left humerus. All these fractures were very slow to unite. During the ten years between 1887 and 1897 the patient sustained in all twenty-two fractures, and, with the exception of one rib, the humeri and femora alone were implicated. The later fractures united more promptly than did the earlier ones, and since 1897 he has not again suffered. The bones have united, but the limbs are much distorted.

OPERATIVE TREATMENT OF GASTROPTOSIS.

In reporting four cases of gastroptosis on which he has operated, Bayea (*Univ. Penn. Med. Bull.*, Feb. 1903) emphasises the advantage of raising the stomach to its normal level by shortening its suspensory ligaments, rather than by fixing the viscus to the anterior abdominal wall, as was done by the earlier operators. The operation devised by the author is similar to that practised by Bier, and consists in placing several rows of interrupted silk sutures from above downward, and from right to left through the gastro-hepatic and gastrophrenic ligaments, so as to form a single broad transverse fold or plication, which shortens the ligament, and raises the stomach to its normal level, without in the least disturbing the physiological mobility of the organ. In all the cases, including four operated on by Bier, the operation has been followed by marked improvement in the general health of the patient, and complete relief of the symptoms due to the displacement of the stomach. Bayea's patients were kept in bed in the recumbent position for four weeks after operation, and on a special diet.

ON GANGLIO-NEUROMA AND OTHER TUMOURS OF THE PERIPHERAL NERVOUS SYSTEM.

Kredel and Beneke (*Deutsche Ztschr. f. Chir.*, Leipzig, 1903) record four interesting cases of nerve tumours. The first is that of a girl, æt. 5, who was brought for treatment on account of the growth of numerous tumours all over her body. The first tumour was noticed when the child was about three months old. At the time of examination the patient's general condition was good, and the nerve functions normal. There were about 160 tumours distributed over the body, only the hands and feet being free. The tumours varied from the size of a pin head to that of an adult kidney. The largest was situated in the neck. Their consistence varied, though most were firm. Many of them were free from adhesions to surrounding parts, but some of the larger ones were attached to the underlying fascia, or to the skin, by connective tissue bands. Some of the tumours had a smooth outline, others were lobulated and irregular.

At the request of the parents, the two largest and most disfiguring tumours were removed,—one from the neck, the other from the temporal region. The latter was firmly adherent to the temporal fascia, which had to be removed with it.

Examination of the tumours showed them to be composed of non-medullated nerve fibres and ganglion cells, an interesting feature being the presence of mitotic figures in the cells. The authors conclude that they were examples of ganglio-neuroma, growing from the sympathetic system. In discussing the nature of such tumours, they refer to a case of Beneke's, in which malignant degeneration of a retroperitoneal ganglio-neuroma took place, and are of opinion that the belief that ganglio-neuromata are always simple, requires modification.

The second case recorded was one of a single large ganglio-neuroma in the left lumbar and pelvic regions of a child, æt. 4. Attention is drawn to the case by the authors, because an opportunity occurred of examining the patient again five years after the partial removal of the tumour, and unexpected improvement of the patient's condition was found to have occurred.

In the third case, one of neuro-fibroma of the great sciatic nerve, a portion of the nerve was split off and removed with the tumour. Examination thirteen years later showed no recurrence, and very little loss of function in the muscles supplied by the nerve.

The fourth case was one of congenital sarcoma of the arm, involving the median and ulnar nerves. Removal of the tumours was followed by secondary nerve suture four months later. Examination after nine years showed almost complete restoration of function.

DRAINAGE OF THE HEPATIC DUCT.

BERGER (*Arch. f. klin. Chir.*, Berlin, Bd. lxix. Hefte 1 & 2) has studied the results of drainage of the hepatic duct in ninety-seven cases of gall-stone operations. He maintains that choledochotomy, with subsequent stitching of the duct, has two great disadvantages. It may be followed by occlusion of the duct, due to a small stone left behind, or to a blood clot, which may lead to an infective cholangitis; secondly, stones overlooked and left behind may lead to recurrence of the original illness.

Drainage by means of a tube inserted into the common and hepatic ducts avoids both these unpleasant consequences. The tube drains the bile away, and leaves a way open for stones to escape. They may also be removed by washings, or with sound or forceps. The possibility of the tube causing hæmorrhage in a cholæmic patient is more a theoretical than a practical objection to its use, as is also the fear of its causing stricture.

In operating where gall stones are suspected in the common duct, it should be incised, unless the danger of the operation would be very much increased thereby. In every case where exploration of the deeper bile passages does not certainly exclude the presence of stones in them, the hepatic ducts should be drained. In cases of cholangitis, its drainage fulfils a vital indication, and in cases of slight infection of the bile passages the same measure is advisable as a precaution. A further absolute indication for drainage arises when stones have to be left behind in the common or hepatic ducts, as sometimes happens. On the whole, the author regards it advisable to drain the hepatic ducts in every case of cholelithiasis, since it is seldom possible to be certain that no stones have been overlooked. Only in cases where the duct is inaccessible, or the anæsthesia is badly borne, should it be omitted. In cases of acute suppurative cholecystitis operation should be limited to the gall bladder, for fear of spreading the infection; choledochotomy may be done later if necessary.

In operating, care must be taken to avoid rupture in separating adhesions. The common duct is generally freed from the gall bladder; and if there is no special contra-indication, the gall bladder is removed. The most convenient place to incise the common duct is in its supraduodenal portion, to which stones may be brought by pressing with the fingers. After incising, the ducts are sounded and stones extracted. After removal of all stones, if this is possible, a rubber tube is inserted into the common duct, and pushed about 4 cms. towards the liver, and then fastened to the wall of the duct. The wound in the duct is otherwise closed by silk stitches, the ends of which are left long, and brought out of the wound. Strips of gauze are packed round the tube. At the end of the second week, tube and plugs are, as a rule, removed. All silk stitches are removed; they can all be pulled out in the course of from two to four weeks. In this way, there is no fear of a stitch forming a nucleus for a concretion. While the tube is in place, the bile passages are washed out with salt solution,—at first daily; later, less often. If stones are present, and cannot be washed out, they may be removed with forceps. The fistula should be kept open till it is evident that all stones have been removed. In about 17 per cent. of cases, stones are subsequently removed which would have been left behind if the duct had been stitched. Recurrence after drainage is rare. The mortality of the operation in uncomplicated cases ranges about 2 or 3 per. cent.

The Treatment of Infantile Spastic Paralysis.

Jones of Liverpool (*Ann. Surg.*, Phila., March 1903) contributes a paper on this subject, in which he advocates a more extensive trial of operative measures than has hitherto been made. "The treatment of spastic paralysis," he says, "has been too long in the hands of the physicians for much real progress to have been made." He divides the treatment into operative and post-operative, and insists on the necessity of keeping the patient under constant observation and supervision for at least two years after operation. Unless this can be done, no operative procedure should be undertaken. "It may be taken as an axiom that prolonged fixation of spastic muscles in a position opposed to their contraction lessens the severity of the spasm." The test for relaxation must be the power of voluntary movement. Operation consists in performing tenotomy or tendon transplantation; myotomy should not be performed. At the wrist, for example, the flexor carpi-ulnaris and flexor carpi-radialis are divided, and fixed to their respective extensor tendons. Tenotomy alone has proved distinctly disappointing, although some success has followed the operation. The after treatment consists in carrying out movements slowly and without excitement, those opposed to the direction of the deformity should predominate; and those presenting the greatest difficulty should be chiefly practised.

ON OPERATION FOR INFECTIVE CHOLECYSTITIS DURING THE ACUTE STAGE.

AMONG cases of suppurative cholecystitis there is a special group, which, on account of their severity, may be designated as "cholecystitis acutissima" (Körte, *Arch. f. klin. Chir.*, Berlin, Bd. lxix. Hefte 1 & 2). They may terminate fatally owing to necrosis or diffuse suppuration of the gall bladder wall with general septic infection. The clinical picture resembles closely that of acute empyema of the appendix vermiformis. As in the case of the appendix, so also in that of the gall bladder, operation is called for because medicinal treatment cannot ward off possible complications, such as peritonitis and suppuration in the liver. Among 136 operations for suppurative cholecystitis, Körte operated 18 times during the acute stage. The illness, as a rule, began very suddenly with fever, chill, and severe constitutional disturbance. In many cases there had been no sign of gall-stone trouble till the onset of the acute attack. A striking feature in most cases was the presence of signs of peritoneal involvement, and in some other resulting paralysis suggested intestinal obstruction. Inflammatory exudate was present occasionally, more often a localised peritonitis; and, in some cases, threatened perforation of the gall bladder had been averted by the formation of adhesions. The sequence of events seemed, in most cases, to be occlusion of the cystic duct, consequent obstruction of the outflow from the gall bladder, and then infection of its contents. Spontaneous cure in such cases is not to be expected. Of Körte's eighteen patients, fifteen recovered, and three died. In no case was an infection of the general peritoneal cavity set up by the operation. The best plan in operating is to resect the gall bladder, as thereby the entire infective focus is removed, commencing suppuration in the liver is freely exposed, and the risk of leaving gall stones behind is less.

OBSTETRICS AND GYNÆCOLOGY.

UNDER THE CHARGE OF

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PLACENTA PRÆVIA.

THE paper by P. Strassman (*Arch. f. Gynæk.*, Berlin, Bd. lxvii. Heft 1) is an exhaustive study of placenta prævia, based on the statistics of

3085 labour cases from the Charité Poliklinik and 32,960 from the Charité Klinik, the former including 101 cases of placenta prævia, the latter 144. Of the 144 cases, fourteen are omitted from the statistics as having occurred before 1882, when combined version was introduced. Of the remaining 231 cases, 16 per cent. were primiparæ. Other causes of placenta prævia are frequent and rapidly succeeding pregnancies and preceding twin pregnancy. In seven cases recurrence of placenta prævia was noted. The fœtus examined in 131 cases showed in 25 per cent. a subnormal weight in relation to its length. This malnutrition is attributed to the abnormality of the implantation site, and to disturbances of pregnancy from hæmorrhage. The influences of the insertion of the cord, of the arrangement of blood vessels of the placenta, and of its morphology, are fully considered. In 18 per cent. labour occurred before the eighth month; in 42·4 per cent. in the eighth or ninth month; in 39·5 at full time—an excess of liquor amnii was rarely met with. Transverse presentations occurred in 20 per cent., and pelvic in 15 per cent. Of sixty-three cases tamponed, 35 per cent. had fever, and 8 per cent. died from sepsis. The use of the colpeurynter is advised only when the fœtus is viable. Therefore it should not be employed before the thirty-second week of gestation. The mother suffers the double danger from hæmorrhage incident to its insertion, and after its expulsion, till version is performed. Strassman had no accidents during manual dilatation. Combined version is the treatment most often employed and most highly recommended. Of 235 children, 62 per cent. were still-born. The maternal mortality was 9·5 per cent. The prophylaxis of a febrile puerperium consists chiefly in avoiding tamponade. Douches are indicated only where septic blood clots are present. For the prevention of placenta prævia, Strassman advises cure of endometritis, cervical lacerations, etc., and avoidance of too rapidly succeeding pregnancy by postponing coitus for some months after delivery.

THE PREVENTION OF PUERPERAL MASTITIS.

No case of mastitis after labour has occurred for two years at the Marburg Klinik. During this time the following treatment, first described by Ahlfeld, has been employed:—Every second day the nipples and areolæ of the pregnant woman were washed with water, dried, and touched with a 10 per cent. solution of tannin in 96 per cent. alcohol.

PUBIOTOMY.

VAN DE VELDÉ (*Centralbl. f. Gynäk.*, 1902, Leipzig, No. 37) warmly advocated this operation for increasing temporarily the pelvic diameters. He makes an incision from the left pubic spine, downwards and inwards to the outer border of the labia majora, at the level of the vestibule. When the bone is reached, a cord is passed round it by means of a specially curved needle, and by this means a Gigli saw is drawn into place, and the pubis divided. A separation of the fragments to the length of about 5 cms. is obtained. After the child has been extracted, the periosteum is sutured with strong silk, and the lower end of the wound is left open to allow for drainage. A pelvic bandage should always be employed. The stitches can be removed on the seventh day. Van de Veldé prefers pubiotomy to symphyseotomy for the following reasons:—(1) The wound is not near bladder or urethra. (2) The soft parts round the divided bone are thicker than round the symphysis, so a laceration extending from the wound to the vagina is less likely to occur. (3) The distance of the operation site from the clitoris lessens the risk of hæmorrhage. (4) The adductor longus and gracilis muscles prevent too great separation of the fragments. As a result, healing is more rapid, and the chances of infection are less.

THE ELECTRIC CAUTERY CLAMP IN CANCER OF THE UTERUS.

NOBLE (*Am. Gynæc.*, N. Y., December 1902) contributes a paper on hysterectomy for malignant disease performed by means of the electric cautery clamp. He claims that this procedure possesses all the advantages of other methods, and in addition he claims for it the following:—(1) More tissue outside the uterus is removed or seared than by the classical methods; all the connections of the uterus are severed either through tissue which has been seared in the bite of the cautery clamp, or these connections have been severed with the electric cautery knife. In this way blood vessels and lymphatics are sealed by heat, and rendered non-absorptive. (2) Risk of implantation is much lessened. An exception to the above is that the attachments of the bladder to the uterus are severed in the usual way. (3) Much less blood is lost, and a dry bloodless field is left after operation.

TUBERCULOSIS OF THE PLACENTA.

WITHIN the past few years several cases of placental tuberculosis have been described. The first case, demonstrating the transmission of tubercle from mother to fœtus, was described by Schmorl and Birch-Hirschfeld. The patient was seven months pregnant, and died of acute miliary tuberculosis. A dead child was delivered by Cæsarean section. In the blood of the umbilical veins, capillaries of the liver, intervillous spaces, and vessels of the chorionic villi, tubercle bacilli were found. Pieces of tissue removed from the fœtus and introduced into rabbits produced typical tuberculosis. Lehmann described a case (*Deutsche med. Wchnschr.*, Leipzig, 1893) where the placenta, from a case of acute tuberculosis, contained tuberculous nodules with typical bacilli, and similar cases have been recorded by Kockel (*Beitr. z. path. Anat. u. z. allg. Path.*, Jena, Bd. xvi.) and Kynoch (*Scot. Med. and Surg. Journ.*, Edin., 1897). In all those cases the fœtal portion of the placenta was chiefly affected. The surface and stroma of the villi contained granulation tissue with tubercle bacilli. The vessels of the villi were in some cases obliterated, and the bacilli were supposed to have reached the interior of the villi from the intervillous spaces through an epithelial defect on the surface.

Runge (*Arch. f. Gynæk.*, Berlin, Bd. xlviii. Heft 2) reports a case where tuberculous changes were found in the decidua serotina. Patient, æt. 32, died of general tuberculosis. On the posterior wall of the uterus (which contained a four months' fœtus) grey nodules were found. The appendages were normal. Pieces of placenta were cut and stained with hæmatoxylin-eosin and Koch-Ehrlich stain. A few tuberculous masses with giant cells were found in the chorionic villi (stroma and vessels). In the decidua, and reaching as far as the glandular layer, there were well-defined tuberculous foci. No tuberculous change was found in either the decidua vera or reflexa. Necrotic changes and abundant hæmorrhages resulting in detachment of the villi, would account for early abortion in those cases as contrasted with the cases where the tuberculous changes were chiefly confined to the villi.

THERAPEUTICS.

UNDER THE CHARGE OF

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TREATMENT OF MUCOUS COLIC.

AFTER describing the character of the actual attack, and pointing out that the slimy mass may vary from a clear, glassy fluid to hardened inspissated lumps resembling organised tissue, the authors proceed to discuss the pathology of the condition. They hold that it only occurs on the basis of a more or less profound sluggishness of the bowels. As a result, not only the fæces are hardened by the absorption of water, but the mucus secreted is similarly affected. Thus the elasticity and mobility of the mucus is diminished, while its adhesiveness and tenacity is increased. When these reach a certain height, an attack of colic occurs. In addition, there seems to be a nervous element involved, since only a small percentage of cases of chronic constipation develop mucous colic. The authors are inclined to consider the condition a neurosis of secretion.

In the actual attack the old tough pieces of inspissated mucus give rise to the violent peristalsis. The violent contractions partly loosen the mucous plugs, while fresh mucus is poured out and still further loosens the attachments. Eventually the old inspissated masses are expelled along with the freshly secreted mucus. The treatment of the actual paroxysm is symptomatic. Rest in bed; hot applications; sedatives, either hypodermically or as suppositories. To remove the mucus, injection of water at the body temperature, without the addition of any irritating substance, such as soap, salt, or glycerin, will bring away large quantities of mucus without any pain. To remove the hardened fæces, give, one to two hours after the water enema, a high irrigation of 300 to 500 cc.m. olive oil. This should be retained as long as possible, and will probably bring away mucus and fæces. As specific curative treatment, measures to remove the sluggishness of the intestines are indicated, since, if it be overcome, the mucous colic can be rapidly and definitely cured. In Von Noorden's experience the best plan is to give a very coarse undigestible rich diet, containing much cellulose. In the intestine there is slow bacterial destruction leading to formation of gases which prevent the formation of hard fæcal concretions. Under such a diet the stools are always soft. There is no need of oil injection. Some mineral waters, such as Kissingen and Homburg, help the diet, but Carlsbad and alkaline waters do harm. Massage of the great intestine, especially of the sigmoid flexure, may be combined with the full diet, but is strictly contra-indicated for a restricted diet. The diet, in addition to the ordinary food, should contain stoned fruit, vegetables, lard, fat, and large amounts of oatmeal. This diet should be taken for three to five weeks till the bowels are regulated, when normal diet may be resumed. As long as the fæcal formation and expulsion remain normal, there will be no return of the mucous colic. As regards general nutrition, the patients are as a rule much run down; consequently, to enable them to put on flesh, the fat in the diet is increased as much as possible. Hydropathy and electrical treatment should not be used in the first four weeks at any rate. In 79 per cent. of the cases a complete cure was obtained.—Von Noorden u. Dapper, *Samml. klin. Abhandl.*, Jena, Heft 3.

ACETOZONE IN TYPHOID FEVER.

HARRIS has made a clinical study of the effect of this preparation in 128 cases of typhoid fever. Benzoyl-acetyl-peroxide is put on the market mixed with an inert absorbent powder. In the presence of water it undergoes hydrolysis which develops the full germicidal power. By hydrolysis, acetic and benzoic acid are produced along with some benzoperacid and acetyl-hydrogen-peroxide. It is to the last substance that the chief germicidal action is due. For administration, the best plan is to dissolve 12 to 15 grs. of acetozone in a quart of hot water. Shake for three to five minutes. After standing for fifteen minutes, to allow insoluble substances to settle down, the clear solution is decanted. This solution the patients are allowed and encouraged to drink *ad lib.*, instead of water. In addition, it was given as medicine in 4 to 6-ounce doses every four hours. The only other medicine given was a gentle laxative, which seems to increase the activity of the drug. Cold spraying, cold pack or tubbing, was employed for high temperature. Harris considers that the acetozone treatment reduced the mortality from 13·1 to 8·59 per cent. Eliminating certain cases in which the drug had not a fair chance, he has a mortality of only 4·87 per cent. for 123 cases treated with acetozone. The course of the disease was materially affected. The average stay in hospital was twenty-eight days. The fœtor of the stools was greatly lessened. Temperature was reduced; stupor and delirium were much less; tympanitis was less frequent; and diarrhœa was checked. The average amount of the drug given to each patient was 138·12 grs. In several cases the drug was given irregularly owing to dislike of the taste and odour of the solution.—*Therap. Gaz.*, Phila., March 1903.

HYPODERMOCLYSIS IN PNEUMONIA.

KAHN, in reporting a successful case, argues that pneumonia, as a general toxæmia with local manifestations, is best treated by removal and dilution of the toxins. This is best done by hypodermic infusion of saline solution, which acts as a powerful stimulant to the kidneys and sweat-glands. In addition to diluting the toxins, the danger of heart-failure is lessened. Kahn does not recommend previous venesection, as it must remove many leucocytes which are the chief defenders of the system. The case which Kahn reports is certainly a strong argument in favour of hypodermoclysis. The woman, æt. 50, was apparently moribund, temperature 105°·5, pulse 160, with Cheyne-Stokes respiration and general cyanosis. Despite energetic treatment with digitalin, strychnine, and atropin, she was getting worse, when hypodermoclysis was tried. Four injections in six hours, amounting in all to about 3 pints, were given. The immediate effect was astonishing. The pulse slowed, temperature dropped, respiration became regular, consciousness returned, and there was marked diuresis. For the next two days rectal injection of saline solution was given at intervals. Recovery though slow was satisfactory.—*Am. Med.*, Phila., 1903, No. 6.

MEDICAL JURISPRUDENCE.

UNDER THE CHARGE OF

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ACUTE COPPER POISONING.

ACUTE poisoning with salts of copper is rare, and three cases reported by Horoszkiewicz are therefore worthy of note. In two, copper sulphate was taken, and in the third the substance was acetate of copper. In all instances the poison was taken for the purpose of suicide. In the first case, in which acetate of copper was taken, the tongue and pharynx were unaltered. The mucous membrane of the œsophagus, on the other hand, was easily detachable, and had a greenish blue colour. The stomach contained 200 grms. of a greenish blue fluid mixed with mucus, with an acid reaction, but having no specific odour. The mucous membrane of the stomach was thickened, hard and dry, as if tanned, and blue in colour. There were a few ecchymoses and hæmorrhagic erosions on the rugæ. The peritoneal surface was unaltered. The large and small intestines contained a fluid similar to that found in the stomach, and the mucous membrane of these parts was also hard, dry, and of a blue colour. The other organs showed no marked changes. In the second case, a woman took a quantity of a concentrated solution of sulphate of copper. Death occurred in a few hours. The stomach contained 500 grms. of an acid, greenish fluid. The mucous membrane was thickened, contracted into rugæ, and was as if tanned. There were a few ecchymoses on the crests of the rugæ. The intestines presented similar appearances, although not so well marked as in the stomach. The other organs of the body showed nothing characteristic. In the third case, in which a young woman took copper sulphate, there were no pathological changes in the stomach and intestines, and the diagnosis of the poison taken was made from the clinical observations and the colour of the vomited matters.

Horoszkiewicz points out that the negative results of the post-mortem examination in the last case is quite in accordance with experience in regard to other poisons, in which, in cases of undoubted poisoning, no pathological changes have been observed. The first two cases indicate that copper salts have a corrosive action attributable to their power of coagulating albumin. The coloration of the mucous membrane of the whole alimentary tract makes the question of diagnosis easy, and the author observes that this colour in the case of sulphate of copper is greenish, whereas in the case of acetate of copper it is rather blue.—*Vrtljschr. f. gerichtl. Med.*, Berlin, 1903, Heft 1.

THE DENSITY OF THE BLOOD AS A SIGN OF DEATH BY DROWNING.

THE determination of the question whether, when a body is found in water, death has actually occurred from drowning, is not easy in all cases. A constant and certain sign of death by drowning is still wanting. Brouardel and others have shown that in cases where bodies have been recovered from the water, the blood has undergone considerable dilution, but the methods of investigation adopted to prove this have been cumbersome, while the important point has not been settled, whether the dilution is the result of death by drowning, or merely of the body having lain immersed in the water for some time after death has occurred.

In the present paper, Placzek endeavours to supply us with an easy method of determining the fact that the blood undergoes considerable dilution, and also that such dilution takes place only in death by drowning, and not as a result of post-mortem immersion. For demonstrating the dilution of the blood, the determination of its specific gravity, before and after drowning, was adopted, and for this purpose the method of Hammerschlag was found to be sufficiently accurate and most easy of application. In his experiments, Placzek first determined the "normal" specific gravity of the blood in every case, after which the animals (rabbits or dogs) were either drowned, or immersed in water until the convulsive stage of asphyxia came on, when they were taken out and killed; or thirdly, an animal was first killed and then submerged in water for some days. Thereafter, the specific gravity of samples of the blood taken from the jugular vein and both auricles of the heart, in each case, was again determined. When the animal died from drowning, a marked diminution of specific gravity, or dilution of the blood, was found, but no change occurred when the animal was withdrawn from the water in the early stage of asphyxia or was submerged only after death. Placzek argues that the same facts will hold good in the case of human beings, and that we thus have an easy and practical means of deciding whether death has taken place by drowning. Coagulation of the blood in a body would naturally interfere with the accuracy of a specific gravity determination, but in death by drowning the blood as a rule remains fluid after death, or, if any coagula should be present, it is recommended that a sample of the blood should be taken from a vessel the contents of which have remained fluid. Decomposition of the blood is stated not to interfere with the accuracy of the test. Placzek corroborated the results he obtained with the simple and somewhat primitive Hammerschlag method of specific gravity determination, by other and more exact means of observation.—*Vrtljschr. f. gerichtl. Med.*, Berlin, 1903, Heft 1.

POISONING BY SULPHURETTED HYDROGEN.

POISONING by pure H_2S gas is very uncommon, and the following case, in which a laboratory assistant was overcome by the gas evolved from an apparatus he was ordered to supervise, is therefore of interest. In the *Lancet*, 24th January 1903, Dr. Oliver has recorded some cases which occurred during the construction of a graving dock at Hebburn-on-Tyne, but in these there is a possibility that other gases were present, and participated in producing the fatal results. In the case now recorded by Burckhardt, the patient, five minutes after adding HCl to some FeS in a Kipp's apparatus, attempted to escape from the fumes, but fell down senseless in the adjacent corridor. His condition at 8 a.m., or immediately afterwards, was as follows:—Complete stupor, face pale, eyes wide open, pupils dilated, reacting slowly to light, corneal reflex present, neck stiff, and head pressed down into the cushion as in opisthotonus, general tremors throughout the body with convulsive contractions at intervals of certain groups of muscles, breathing slow, weak, and irregular, face and chest covered with perspiration. Three hours afterwards his condition was practically the same, notwithstanding treatment by artificial respiration, administration of oxygen, ether, etc. In the evening at 6 o'clock patient was still in a state of stupor, but later began to cry out and to throw himself about from side to side. Next day he was sensible, and complained of pains in the abdomen. He was unable to sit up in bed, and there was inco-ordination of the movements of the arms. He voided a large quantity of urine, which contained sugar, but no albumin. In the next few days the patient rapidly improved, but complained still of headache and giddiness. The sugar disappeared from the urine. A spectroscopic examination of the blood made three hours after the commencement of the symptoms showed two well-marked oxyhæmoglobin bands, but nothing abnormal. This result is quite in accordance with previous spectroscopic observations of the blood in similar cases, in which, although toxic symptoms were present, no evidence of sulph-hæmoglobin was found.—*Cor.-Bl. f. schweiz. Aerzte*, Basel, 1903, No. 5.

DISEASES OF THE EYE.

UNDER THE CHARGE OF

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CONGENITAL DEFECTS OF THE EYES.

WITH an organism so highly developed as the eye, congenital errors are, of course, not uncommon. Certain peculiarities have recently been the subject of particular observation.

Congenital keratitis is discussed by Terrien (Paris), who gives a careful and interesting account of the case of an infant born at term of a mother who, for the final three months or more of her pregnancy, had suffered from a considerable degree of albuminuria. At birth there was a central opacity of each cornea, without any other apparent congenital abnormality whatever. The following day, though the extreme periphery of the right cornea was quite transparent, the whole central area was opaque. This capacity was most dense at the very centre, but even there the outline of the iris could be made out; this central part was bluish white, almost like porcelain in aspect, and this opacity was plainly due to an infiltration and was not a scar. In the left eye, the condition was very similar but not so intense. The child having died of broncho-pneumonia on the eighth day, the eyes were examined microscopically by Terrien, who found in the central area of the cornea a large and deep "posterior" abscess; there was œdema of the whole anterior corneal tissue, and all over the ulcerated area Descemet's membrane was completely gone. The anterior parts of the sclerotic were thickened and the whole uveal tract engorged; the iris was pushed forwards, so that here and there it was incorporated in the floor of the ulcer, and no "angle of the anterior chamber" existed. Even the retina was inflamed and was charged with numerous hæmorrhages. In regard to the actual vessels found in the cornea, it must be borne in mind that at no period of development does the cornea contain such except in its most superficial layers, so that their presence helps greatly to clinch the diagnosis of an actual inflammatory affection rather than a mere error in development. A further point of interest was the extreme infiltration of the uveal tract by cellular elements and vessels. So great was this, that the iris was thickened and bossy, the little masses forming actual granulomata, some of which were pediculate, and some had even broken off from their attachments and were lying free. Terrien regards this cellular infiltration of the uveal tract as the basis of the whole condition. He adds that there was no need to suppose syphilis to have been present; the defect in nutrition caused by the existence of albuminuria so copious is quite sufficient to account for the occurrence.

Congenital ophthalmoplegia was observed by Péchin in a youth, æt. 20, who, ever since taking up work as a carpenter, had had much difficulty on account of the defect present in the eyes. There was incomplete ptosis, worst in the left eye, and in order to enable him to see on the level of his eyes he always had to throw back his head. Neither in a lateral nor in a vertical direction could he move his eyes to a greater degree than 1 mm.; they were quite fixed in parallelism; he could, however, accommodate perfectly, and the pupils reacted normally. When his myopia was corrected by lenses, his vision was up to standard. There was no exophthalmos and no interference with the field of vision. The facial nerves had not entirely escaped, for there was distinctly deficient movement of the cheeks, though the paresis was not so complete as in the case of the eye muscles. The occipito-frontalis behaved in a singular manner, for, though it could act fairly well, the contraction could not be kept up for more than a very few seconds at a time.

Congenital defect of movement is the subject of a paper by Evans (Birmingham), who describes carefully a variety which has from time to time been observed. The essential points are these:—In the primary position there may be nothing to remark, or perhaps slight enophthalmos, but so soon as the patient attempts to turn both eyes to (say) the right, the right eye moves correctly, but the left, instead of moving with the other, cannot be carried so far as the other, and more and more sinks into the orbit or is drawn backwards into it, thus producing enophthalmos, and allowing the lids to approximate more closely than before, giving rise to the appearance of a "small" eye. On looking now to the left side, the left eye again comes forward, enlarging the palpebral fissure as it does so, but it cannot be moved beyond the middle line of the orbit. In a number of the cases, even when cocaine has been given and the eye seized with forceps, it is found impossible to drag the affected eye outwards any further. The vision of the affected eye may be quite good, and, except for the ugly look, may never be observed or remarked upon by the friends of the patient. It is a curious point that 70 per cent. of the cases recorded have been in girls. To account for this condition there are two theories: one is that the muscle (internal rectus) is inserted too far back, and therefore, when it contracts, it exerts a direct backward pull upon the globe, while at the same time its power of true rotation inwards is correspondingly greatly diminished. The other theory is that the fault lies primarily with the external rectus, which is composed, not of contractile elements, but of fibrous tissue; by it the eye is firmly anchored and prevented from proper movement towards the opposite side, the internal rectus thus wasting its energies in drawing the eye back into the socket since it cannot move round. Probably, at least in a number of the cases, both conditions were to some extent present. Obviously the anomaly is not one very amenable to treatment, for tenotomy of an almost fibrous external rectus could accomplish little good if any, while advancement of the internus may, owing to its abnormal position, be practically impossible, even if it could do good. As a practical matter, operations in these cases have not been attended with any beneficial result, but rather the contrary.—Terrien, *Arch. d'opht.*, Paris, 1902, tome iv. Péchin, *Rev. gén. d'opht.*, Paris, 1902, tome xi. Evans, *Ophth. Rev.*, London, 1903.

CONGENITAL PURULENT OPTHALMIA.

A NUMBER of cases have been recorded in which a child has first shown symptoms of ophthalmia neonatorum, not a few days after birth, but with an interval measured only by a few hours. Most of these, however, have been a little obscured by uncertainty as to whether the finger of the examining accoucheur might not have carried infection to the eye of the child before birth, a long time having elapsed between rupture of the membranes and birth; in other cases the data recorded are very insufficient. In the case published recently by Armaignac, a child was born at the eighth month; after labour-pains had lasted one hour and a half, the midwife ruptured the membranes, and in three quarters of an hour the infant was born. The lids were observed to be swollen, red and tense, *immediately* after birth, and a drop of pus was seen to escape from between them; pus was also observed to be escaping from the vagina. The family physician saw the child about an hour later, and found the corneæ already whitish and macerated; in spite of the most careful treatment, begun at once, both corneæ sloughed extensively. Two years previously, it appeared, the mother had borne a child which had been attacked by purulent ophthalmia, and she herself had suffered from metritis during her second confinement. There being only one hour's interval between the rupture of the membranes and the demonstration of active purulent ophthalmia, it is practically impossible that the infection can have taken place at that moment, for that would involve on the part of the microbe an activity of virulence quite beyond what is known of its period of incubation; and Armaignac suggests that if the gonococcus, as seems to have been clearly proved, can make its way into the tissue of the uterus and set up in it a "specific" metritis, it might well enough make its way through the amnion. Chemical substances injected into the body of the mother pass rapidly and freely into the amniotic fluid, as is well known, without passing through the fœtus; and if so, then why may not microbes? he asks.—*Ann. d'ocul.*, Paris, October 1902.

OPTIC NEURITIS IN SYPHILIS.

FROM one text-book to another the statement is apt to be copied, that among the causes of optic neuritis, syphilis ought to be mentioned. As a matter of fact, however, syphilis only causes optic neuritis with extreme rarity; some of the best observers say they have never seen it. This of course refers to primary optic neuritis, and not to the neuritis which is so frequent an accompaniment of nerve lesions, which, in their turn, are the definite consequence of syphilis. Veasey (Philadelphia) records two cases which, by a very singular coincidence, occurred in husband and wife. Mr. X., æt. 45, for a fortnight before consulting Veasey, had found vision failing, especially in the left eye, but also in the right, and was also suffering from considerable pain behind the eyes: vision was found to be $\frac{6}{9}$ in the right eye, and $\frac{1}{100}$ in the other. The ophthalmoscope showed papillitis, not of high degree, in each eye, with no hæmorrhages, and but little invasion of the surrounding retina. The field of vision was good, and there was no central scotoma, which practically shows that the neuritis was not retrobulbar or "descending." The patient had acquired syphilis three months previously, and was at the time undergoing mercurial treatment for mucous patches, etc.; under more vigorous mercurial treatment recovery was eventually almost complete. A fortnight after the first visit, the husband returned bringing his wife, who was also suffering from mucous patches and a skin eruption, though her husband's infection dated only three and a half months back. She too had left-sided papillitis, which passed off under energetic use of mercury without leaving any permanent evil results.—*Am. Journ. Med. Sc.*, Phila., June 1902.

REPORTS OF THE MEDICAL SOCIETIES.

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Edinburgh Medico-Chirurgical Society.—*May* 6, 1903.—Sir **Thomas Fraser**, President, in the chair.—Dr. D. C. **Watson** showed a case of keratosis pilaris.—Mr. D. **Wallace** showed a patient after injection of nose with paraffin.—Dr. **Norman Walker** showed two cases of lupus erythematosus which had been treated by exposure to arc electric light.—Dr. W. H. **Miller** showed a girl, æt. 16, with multiple innocent tumours in both breasts.—Mr. **Alexis Thomson** showed a patient after high excision of the rectum for carcinoma, with preservation of the sphincters and complete control.—Mr. **Cathcart** showed—(1) A patient after gastro-duodenostomy for pyloric obstruction; (2) a patient after compound fracture of the femur caused by two wheels of a loaded goods waggon passing over the thigh.—Mr. **Cathcart** also showed a three-way stop-cock for use in washing out the stomach or bladder.—Mr. **Alexander Miles** showed—(1) Intestine from a case of hernia into the duodeno-jejunal fossa; (2) Foreign bodies from cases of ano-rectal fistulæ. —Dr. F. D. **Boyd** showed Bancroft's and. Haldane's apparatus for estimating oxygen and carbonic acid gas in small quantities.—The **President** read a paper on "Lipæmia in Diabetes Mellitus." Increase of fat in the blood of diabetics has long been known to occur, but marked lipæmia with diabetic coma and dyspnœa is a rare event. He had only seen two cases, in both of which extreme lipæmia was found to be present during the life of the patients, and was verified by post-mortem examination. The second of these cases occurred quite recently. The patient was a man, æt. 17, and the urine contained, besides sugar, acetone and diacetic acid. The treatment consisted of special diet and the administration of phosphate of soda. He improved somewhat, but the acetone odour gradually increased and coma supervened. Intravenous injection of phosphate of soda did no good. The blood was examined, and showed particles of fat in the plasma. At the post-mortem the serous cavities were found to contain large quantities of milky fluid. The same milky fluid was found in the blood vessels of all the organs. The percentage of fat in the blood was found to be 16·29, the normal amount being 0·2. Acid bodies present in the blood are probably the real cause of the coma, and of these β-oxybutyric acid is the most important. The source of this acid is not known, but it can be formed from sugars. The source of the fat is probably the sugar in the blood. The amount of sugar excreted fell markedly just before the onset of the coma, and this was probably due to the decomposition of the sugar into fat and β-oxybutyric acid. The best treatment for this condition is the administration of alkalies, and this should be commenced as soon as the smallest trace of acid or fat is found.—Dr. L. C. **Bruce** read a paper on "Clinical and Experimental Observations upon General Paralysis." He believed the disease to be due to toxines absorbed from the intestinal canal, and he had been trying the effect of treating patients with various serums. The antibacillus coli serum gave no improvement. Anti-streptococcus serum produced a slight but temporary improvement, and only in cases where a hyperleucocytosis occurred. Serum obtained from general paralytic patients in a quiescent state of the disease gave the best results. Of eight cases treated, three were cured, one relieved, and four remained *in statu quo.* By establishing a hyperleucocytosis a temporary arrest of the symptom is obtained.

Clinical Meeting.—*May* 20, 1903.—Sir **Thomas Fraser** in the chair.—Mr. **Miles** showed—(1) Four patients after operation for perforated duodenal ulcer; (2) Patient illustrating comparative results of Chopart's and Syme's amputations.—Dr. G. A. **Gibson** showed a patient with Addison's disease.—Mr. **Cathcart** for Mr. **Caird** showed—(1) Two cases after removal of gastric carcinoma; (2) case of enterectomy after operation by colotomy for obstruction; (3) case of operation for gangrene of the gall bladder; (4) case of removal of carcinoma of the bladder.—Dr. **Norman Walker** showed a series of cases of lupus, all having been treated with marked improvement by the X-rays and Finsen lamp.—Mr. C. W. **Cathcart** showed—(1) A patient after laminectomy for paralysis; (2) a patient after short-circuiting small intestine for fæcal fistula; (3) a patient showing results of unusually severe whitlow necessitating amputation at the elbow.—Dr. **Alexander James** showed—(1) A case of so-called acute labyrinthitis (Voltolini); (2) a case with similar acute symptoms, but associated with blindness and optic nerve changes; (3) a case of heart displacement caused by phthisis and pleurisy.—Mr. **Alexis Thomson** showed—(1) A patient after operation for osseous ankylosis of the jaw; (2) two patients after excision of the shoulder joint by Kocher's method for tuberculous disease.—Professor **Chiene**, Mr. **Caird**, and Dr. G. A. **Gibson** showed a number of pathological specimens.

Glasgow Medico-Chirurgical Society, *May* 1, 1903.—Dr. **Alex. M'Lennan** showed—(*a*) An infant operated on for intussusception. (*b*) A boy from whom there was removed a piece of glass tubing by abdominal section. The boy, while endeavouring to put a piece of rubber tubing on to a glass tube, drove the glass into the abdominal wall. The question was whether the glass had entered the peritoneal cavity. As the constitutional symptoms were greater than could be accounted for by the wound in the abdominal wall, it was decided to perform abdominal section. There was blood in the peritoneal cavity, and an opening was found in the small intestine with a piece of glass lying against it. The glass had also pierced the peritoneum on the posterior abdominal wall, between the aorta and the inferior vena cava, about the level of the third lumbar vertebra. (*c*) A new method of intestinal union, by means of bone bobbins.—Dr. J. **Galbraith Connal** showed—(*a*) A patient from whose left nostril a large sarcomatous tumour was removed. (*b*) A patient with empyema of all the accessory nasal cavities on the left side.—Dr. **Leslie**

Buchanan described a case of pernicious anæmia, in which he had made a histological examination of the eye.—Dr. **Hugh M'Laren** showed—(*a*) A specimen of cancer of the œsophagus, with secondary extension to the stomach. (*b*) A specimen of obstruction of the intestine by Meckel's diverticulum. (*c*) A specimen of obstruction of the intestine by fibrous bands.

Glasgow Pathological and Clinical Society.—*May* 11, 1903.—The President, Mr. A. E. **Maylard**, in the chair.—Dr. **James Hinshelwood** (for Prof. T. **McCall Anderson**) showed and read notes of—(*a*) A case of Hodgkin's disease (?); and (*b*) a case illustrating the diagnosis of tuberculous from hereditary syphilitic ulceration.—Dr. A. **Maitland Ramsay** showed a patient who had been totally blind from congenital cataract, and who recovered his sight, after operation, at 30 years of age; Dr. Ramsay read notes on the phenomena which followed the operations, the case being one of quite exceptional interest.—Dr. A. N. **MacGregor** showed three cases, and read a paper on intussusception, with special reference to recurrence.—Dr. **Napier** showed a case of dermatitis exfoliativa with peripheral paralysis and joint deformity.—Dr. R. M. **Buchanan** showed specimens (naked-eye and microscopic) from a case of glanders in man, and experimental glanders relating to the investigation of it.—Dr. **John W. Findlay** showed microscopical preparations from a case of spleno-medullary leukæmia.

ANALYTICAL REPORTS.

Triscuit.

(The Natural Food Co., Niagara Falls, U.S.A. London, 6 & 8 Eastcheap, E.C.)

The name Triscuit is rather neat, although, as far as we can see, unsupported by any evidence (for biscuit means, we believe, twice-cooked, triscuit thrice-cooked), and triscuit is only noted as a compact form of cleaned and filamental whole wheat, ready cooked but not predigested. One must expect, however, from its name, that the "ready cooked" spells thrice cooked, nor does the taste of the biscuit belie the same. In appearance triscuit is somewhat like one of those delicate wafers commonly used along with ices, that is from a distance; but on closer acquaintance with it, one sees that it is made up of pulled wheat without any sugary interlayer. It is, in fact, a whole-wheat wafer, manufactured without yeast, flour, or meal, fenestrated, and baked by the aid of electricity.

The wafers are by no means unpalatable, and are certainly nutritious. If the company could only see their way to flavour the same in one or two different and innocuous ways, their products would be much enhanced in value.

MONTHLY NOTES
ON METEOROLOGY AND VITAL STATISTICS.

By A. LOCKHART GILLESPIE, M.D., F.R.S.E., F.R.C.P.Ed.,
MEMBER SCOTTISH METEOROLOGICAL SOCIETY.

Meteorological Means for the East of Scotland District, for the Five Weeks ending May 2, 1903; and for the Year from January 1.

		Temperature.			Rainfall in Inches.		Sunshine. Hours.		Mean Daily Variability of Temperature.
		Mean.	Accumulated Day-Degrees.		Actual.	Accumulated from Jan. 4.	Actual.	Accumulated from Jan. 4.	
			Above 42°.	Below 42°.					
Mean .	[1]	45°·2	138°	66°	1·3	9·0	133	365	2·1
	[2]		294°	401°					
Observed	[1]	42°·2	85°	101°	1·5	14·1	119	303	2·4
	[2]		284°	480°					
Difference	[1]	−3°·0	−53°	+35°	−0·2	+5·1	−14	−62	+0·3
	[2]		−10°	−79°					

Vital Statistics.

Mortality in Four Large Towns in the East of Scotland (Edinburgh, Dundee, Aberdeen, and Leith), during April, and since January 4, 1903. Actual Numbers and Rate per 10,000 per annum.

		Total.		Constitutional Diseases.		Circulatory System.		Respiratory System.		Nervous System.	
		No.	Rate.	No.	Rate.	No.	Rate.	No.	Rate.	No.	Rate.
Deaths expected and Mean Rate for 1891–1901	[1]	1227	201	246	40·4	125	20·6	246	40·4	140	22·9
	[2]	5192	213	976	40·0	494	20·3	1116	45·8	570	23·5
Actual Deaths and Rate per 10,000	[1]	1055	173	224	36·8	130	21·4	172	28·2	116	19·0
	[2]	4603	189	942	38·6	519	21·3	820	33·7	516	21·3
Difference from Mean	[1]	−172	−28	−22	−3·6	+ 5	+0·9	−74	−12·3	−24	−3·9
	[2]	−589	−24	−34	−1·4	+25	+1·0	−296	−12·1	−54	−2·2

	Digestive System.		Urinary System.		Pneumonia.		Phthisis.		Cancer.	
	No.	Rate.	No.	Rate.	No.	Rate.	No.	Rate.	No.	Rate.
Deaths expected and Mean Rate for 1891–1901	71	11·7	33	5·5	105	17·2	121	19·8	53	8·6
	302	12·4	130	5·3	431	17·7	486	19·9	216	8·9
Actual Deaths and Rate per 10,000	70	11·5	33	5·5	96	15·7	88	14·4	57	9·3
	339	13·9	133	5·4	408	16·8	409	16·8	235	9·7
Difference from Mean	− 1	−0·2	±0	±0	− 9	−1·5	−33	−5·4	+ 4	+0·7
	+37	+1·5	+3	+0·1	−23	−0·9	−77	−3·1	+19	+0·8

* Note.—The figure [1] denotes the data for April, [2] for year to date.

The four weeks ending the 2nd of May 1903 were therefore much colder than usual, the actual deficiency in mean temperature reaching as much as 3°F., the deficit being due both to an absence of warmth and an increase of actual cold, most marked in the former. The rainfall slightly below the normal; the hours of bright sunshine below the average, but most unequally distributed: for, while the second and third weeks of the period showed considerable increases in the duration of bright sunshine, the fourth week gave a deficit equal to 84 per cent. of the average.

The figures for the year up to date, notwithstanding the low temperature of April, show that the mean temperature has been rather above the normal, due, in this case, to a decrease in day-degrees of cold; the rainfall is rather over 50 per cent. above the mean, and the hours of bright sunshine 17 per cent. below it. Apparently, deficiency of sunlight results in a decreased death-rate.

The number of deaths registered during April was, as in the former months of the year, much below the average. Circulatory and cancerous causes alone show increased figures. Deaths from respiratory diseases were 30 per cent. below the average; those from phthisis 27 per cent. below; influenza caused seven deaths directly.

For the first four months of the year the records yield the most remarkable result of a decrease in the number of deaths, equal to 11 per cent. of that expected, only the deaths from circulatory, digestive, and cancerous causes giving decided increases, while the deficit under respiratory diseases is as much as 26 per cent. of the value calculated for.

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